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THE
ART OF ARCHITECTURE

THE ART OF ARCHITECTURE

BY

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P R E F A C E

TO REVISED EDITION

THE EXCEPTIONAL CIRCUMSTANCES of the past six years have had the beneficial effect of focusing attention on masterpieces of art. Not only have people been thankful when great buildings have escaped destruction but they have shown renewed interest in the perennial qualities which are seldom absent from works of merit.

All disputes concerning mannerisms and style fade into insignificance when the finest buildings of all periods are re-examined with reverence.

The value of continuity in design has long been realized, both by enlightened architects and a discerning public. The outcome has been a tolerant view of the art which encompasses so much.

The object of this revised edition is to meet a demand, at a critical juncture, for a treatise which attempts an analysis of architectural design. It has been considered that progress in design is more certain of success if based on precept and on understanding of cause and effect.

The subject-matter of this volume will be familiar to a wide circle of architectural students whose interest in harmonic qualities of building spurs them to heights of imagination. Contrary to uncertain beliefs that architecture is merely a building science, emphasis is given in this work to its pre-eminence as an art.

The authors present this book in its second edition with the firm belief that the theories expounded belong to the very fibres of the art they profess.

A. E. R.

H. O. C.

PREFACE TO FIRST EDITION

THE OBJECT OF THIS book is to analyse the main factors which govern architecture. The approach to the subject is through the paths of history. The book makes no pretence to be a comprehensive account of building through the ages, but it attempts a study of the basic laws of architectural design.

The history of architecture belongs to modern, and chiefly to more recent years; the nearest approach to analytical studies existing in those works of the nineteenth century which comprehend the subject as one vast whole. In this period began those enquiries into the architecture of the nations outside the sphere of western Europe. The devotion of many writers and architects has resulted in the compilation of historical data sufficient to suggest a universal architectural history, but the materials thus selected offered so many facets as to obscure the major question of governing principles. To dissociate historical facts from a discussion of elementary laws of design did not seem to be a practical way of dealing with the subject. Neither has it been deemed advisable to compile a work which should consist of a mass of technicalities, or one biased in any particular direction. The scheme finally adopted is to give a synoptical view of architecture through the ages to the present day; to discuss the mutual dependency of the architecture of all countries and to restate principles which may or may not be widely known.

By dealing with the chief expressions of architecture, stage by stage, showing as far as possible the chronological development as well as the gradual formation of principles, a key has been provided for designers and others who may wish for something more than superficial knowledge. The vastness of the subject will account for the fact that some sections are only lightly sketched in. As to defining exact rules and formulæ for the manufacture of architectural designs and decoration in the future, that is in no wise the aim.

Throughout this work the importance of historical knowledge is

PREFACE TO FIRST EDITION

stressed; but of greater moment than mere historical detail is the genius of the individual. That is to say, the skill of the artist is shown to belong to something far more special than imitative pedantry.

The book consists of two main sections. The first deals with the state of architecture from the earliest times to the present day. The second treats of architectural decoration and ornament and directs attention to the affinity that exists between the different sections of this branch of design. To some extent the two accounts, although dealt with separately, cover practically the same ground.

Regarding the sources from which the information has been gathered, every statement has been strengthened by research, and in the case of buildings in Europe, Egypt and India by actual study on the spot.

The book aims at a brief analysis of many buildings both ancient and modern with which the reader may be familiar. Reference to the captions given under many of the illustrations will show the attempt that has been made to give salient facts in a direct and convenient way.

The material for this book has been gained during many years of research and travel. The line illustrations have been taken from various sources and from original sketches, and have been redrawn by N. E. Block, B.A., A.R.I.B.A., D. Hottinger and J. R. Stammers. The book is to be regarded primarily as a work of reference on particular aspects of architecture, and in this it is hoped it will be helpful. The synoptical nature of the formation and the deductions on the subject of architectural principles are put forward as the chief reasons for its right to be.

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FOREWORD

By PROFESSOR W. G. CONSTABLE M.A., F.S.A.
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Late Director of The Courtauld Institute of Art,
University of London

ALARM TEMPERED GRATIFICATION ON my being asked to write a foreword to a history of architecture. In this country art historians have been too apt to regard architecture as primarily a technical study, whose history is only to be understood and expounded by professional adepts ; with the result that much of the writing on architecture in England is inclined to limit itself to technical considerations, and to neglect broader questions of cause and effect, and, above all, the relation of architecture to other arts.

It is often forgotten that any particular art is not an independent manifestation of human creative instinct, but is one aspect of a general creative activity, whose character is mainly determined by man's metaphysical attitude. Thus, at any given time, the arts share certain common characteristics, and exercise upon each other varying degrees of influence. In the business of building, man's conception of his place in the universe has always found particularly clear expression ; so that architecture has come to exercise a very definite effect upon the other arts, and has justly earned the title of the mistress art.

It follows that for the study and understanding of style in all or any of the arts, some knowledge of architectural history is essential. But so long as writing on architecture is regarded as a matter of description rather than of analysis, of answering the question " what " more effectively than the question " why," that knowledge is difficult to attain.

It is because this book is so largely concerned with the reasons for architectural phenomena that I have personally found it so deeply interesting and stimulating. It is not, in the ordinary sense of the term, a history of architecture. And it is no short cut to knowledge. Its main purpose is to explain why, at different periods and in different places,

FOREWORD

men have built in different ways. Description, of course, there has had to be, ranging over a wide field, and often brilliantly carried through. But, of necessity, it has had to be severely condensed at times; and so, like many of the books best worth study, the more the reader brings to the book, the more he will carry away from it. Description is subordinate to discovery of the principles which underlie all architecture, and at once limit and inspire the architect. The authors explore the relation of political, social, economic and religious ideas and practices of a community to its building; and show repeatedly how these have shaped building at different places and periods. But, throughout, they emphasize that such forces are only relevant in so far as they act through or shape the mind of the artist; and that besides stability and convenience—the two elements which other types of human activity demand from the architect—there is the element which is the independent contribution of the architect himself, the search for beauty (a vague and unsatisfactory word: but what is there to put in its place?) which dictates the arrangement of forms, and so in the last resort dominates the other two. In other words, it is the architect's desire to establish certain relations of masses and voids which is the controlling factor, and makes architecture something more than engineering.

This search for underlying principle through historical survey and analysis gives the book its interest and value to the art historian; but it does more—it makes it a challenge and incentive to the practising architect. By implication, if not in set phrases, the whole doctrine of functionalism is denied. To quote only one phrase: "It should not be forgotten that art depends on the spiritual character of a period to a greater degree than to exact observance of prevalent material conditions"; a conclusion re-echoed again and again. Joined to this is emphasis on the part traditions must play in all building—traditions not in the sense of imitation, but in an understanding of principles of construction established by experience and determined by materials, and adapting these principles to new uses and new discoveries. How this may be done is the theme of two of the longest and most important chapters of the book. In these, the authors accept wholeheartedly the standpoint and outlook of the most modern architect; but reveal that in architecture, more than in most arts, a little learning is peculiarly dangerous, and that the inventive and original mind will find not a hindrance but support and inspiration in a sense of the past.

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PART TWO

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CONTEMPORARY DECORATION

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PART I

Chapter I

INTRODUCTION

OF ALL THE GREAT branches of human activity, the art of building is one most closely related to the progress of mankind. After study, the subject is found to be expressive of something more than considerations of mere necessity, being, in fact, associated with the various stages of the upward struggle of man. With the advance of intellect it became inevitable that from the earliest utilitarian structures new forms expressive of higher ideals should be evolved. In this is to be seen the genesis of architecture as a fine art.

Each successive conception of the philosophy of life has called forth plastic forms in complete harmony with prevalent thought, the history of the systems of organized life recording the profound changes that have taken place from time to time in art as the product of human thought.

Architecture is the most imposing of the arts of form; it relies upon the relation of ideal and material considerations for its finest expression, but its whole spirit is opposed to any theory of entire subordination to utility alone. There is no denying the fact that architecture, while primarily related to considerations of purpose, reserves to itself the right of independence.

Turning to the earliest manifestations of the art, we find eloquent proof of this assertion crystallized in the forms of the monuments of Mesopotamia and Egypt. In those remote periods architecture developed principles it has ever since retained.

Regarding character, it can be said that the absolutism of the Chaldean and Assyrian rulers, as well as the mysticism of the Egyptian priests, is reflected in the dramatic compositions of pre-classical times. Architecture, therefore, is not only the outcome of assembling materials, but has always

relied for its ultimate effect on the dynamic expression of human thought. *Æsthetic* inspiration, as opposed to crude assembling of materials, is more clearly indicated in the masterpieces of Hellenic Art. The orderly formation of temples was the outcome of rationalization, which to the Greek architect was a guiding principle. In the glory that was Greece noble structures, not entirely subjected to utilitarian needs, resulted from countless experiments.

To the refinement of Hellenic Art, Rome added ostentation and magnificence expressive of her military power. The strong organization of the conquering race brought about a new conception of planning. The adoption of the beam and the arch, combined with new methods of construction, enabled vast areas to be spanned without intermediate supports. Such factors were productive of great changes in architectural composition. In the design of the *Thermæ* and the *Basilicas*, no less than in the planning of the *Fora*, there is ample proof of the value of the contributions of Imperial Rome.

Paradoxical as it may seem, the subjugation of material to predominant thought has ever been the subconscious aim of the mind. The period that followed the decline of Rome, poor as it was in the West, was productive of a new era in the East. Byzantium, the successor to Greece and Imperial Rome, through a long dynasty of emperors, upheld the classical legacy. Vaulting found new expression in the design of cupolas, and ornament became more stylistic.

The spirit of classicism, later discernible in Islamic Art, is the legacy of those Greek Artists who found refuge from Justinian at the court of Chosroes. In like manner the more diverse civilization of the West, founded on the ruins of Rome, developed a fresh order of building which also became receptive of the Byzantine impulse. Thus Constantinople, while working out its destiny as the Capital of the New Empire, became the guardian of architectural tradition and the fountain head of mediæval art.

In Romanesque Art, directly influenced from Constantinople, the anonymity of the several schools is evidence of religious conventions inspired by monastic ruling. The unit formation of bays and vaulting found in the early cathedral plans provided the embryonic values of subsequent types and formed essentials in design.

The triumph of logic over material, however, was reserved for the architects of the thirteenth century, in the West of Europe. The archi-

INTRODUCTION

ture of thrust and counter-thrust, of the broken arch, and of vertical accentuation, imparted a new conception of beauty. Religion, animated by the spirit of emulation, encouraged conscious rivalry in architecture and the ancillary arts. Constructive skill, advancing progressively, led eventually to the final flowering of Gothic, the most inspiring architecture ever produced by the human mind.

Reaction from the hieratic control of the Church, as well as renewed interest in classicism, modified æsthetic appreciation. The desire to relearn and restate the former qualities of Roman architecture formed the basis of the new belief. The inevitable change of thought in the direction of classicism, which spread from the Italian Peninsula, was destined to supplant the Gothic architecture of Mediæval Europe. The scarcity of literature describing the ancient buildings of Rome led to the acceptance of the writings of Vitruvius, the sequel being an omnipotent formula for architectural design. The art was now entering upon a phase of style consciousness, with the result that it became the aptitude of the few.

Beyond the natural boundaries of Italy the movement expanded until its developing principles became part of the æsthetic creed of every Western nation. The new movement was productive of a system which adapted old forms to fresh purposes. To classical scholarship was added the vivid imagination of the individual designer. The Renaissance in Europe, after passing through successive stages, eventually became a vehicle for the rhetorical Baroque.

The basis of the Renaissance in architecture is to be found in predetermined direction and the observance of rules for composition and details. In this new trend of revived ideas must be sought the origination of modern civics.

The nineteenth century, with its intensified industrialism, distributed society on a broader basis, encouraging anarchical tendencies in art so characteristic of extreme individualism. As a result the rational use of material was neglected and undue value attached to veneers of historical styles.

With the adoption of such aids to rapid construction as steel and reinforced concrete, new avenues of design were explored. The preponderance of economic factors, as well as the universality of great financial interests, had the effect, each and severally, of levelling architectural design to an uniform rendering.

THE ART OF ARCHITECTURE

The great changes which have accompanied man's conquest of nature have not been without effect on the architecture of to-day.

Of the future nothing certain can be foretold. The progressive idealism of mankind, the unrest which is the concomitant of modern existence, will be asserted again as in the past. The mind, which is the driving force of all fine art, can only achieve success by rigidly subordinating material to imaginative thought. Although principles of design have from time to time been set forth, their observance alone is not sufficient to endow a building with the distinction of a work of art.

In the chapters which follow, an attempt has been made to explain the philosophy of architecture and to analyse the underlying forces. Although ornament and decoration are integral branches of architecture, for the purposes of this work it has been thought convenient to group them under a separate section.

Chapter 2

A SUMMARY OF ARCHITECTURAL COMPOSITION IN THE PAST

EXAMINATION OF THE ACKNOWLEDGED masterpieces of past architecture reveals the observance of similar principles of design at widely different periods of time. The triumph of mind over material is clearly demonstrated in the well-balanced co-ordination of the various factors which have called the particular work into being.

In spite of specific differences of style, evolved during each stage of history, the basic principles of design remain constant. A simple interpretation of style in building can be defined as the treatment of certain materials to accord with a predetermined mode. There have been numerous conclusions as to the meaning of basic principles in architecture. It is generally conceded that stability, convenience and beauty are primary essentials to excellence in building. This theory leads to consideration of the unifying element in a design which is the key to perfect cohesion, the repetition of a dominant element being creative of rhythm. Contrariwise, forms in themselves pleasing do not always combine in an ensemble.

Architectural devisement falls into two main divisions, both of which are interdependent. When we speak of plan, or elevation and section, we imply the combining of horizontal and vertical elements. The elevational treatment controls the visual effect by which the architect makes his chief appeal to the æsthetic sense. It has therefore been deemed practical for the purpose of this chapter to analyse separately each of the components which enter into architectural design. Such terms as mass, scale, proportion, silhouette and character, explain the qualities which are desirable. But it is the just arrangement of the plan which controls the above.

While the plan is the outcome of logical arrangement, the treatment of an elevation to accord with a plan demands more imaginative handling, the technique of architectural composition entering very largely into both. To explain the principles which are not only generic but constant in architecture it becomes necessary to deal with each separately.

Scale is one of the most important factors in determining the proportion and extent of a design. The key to the term "scale" is found in the relation of the human figure to the various elements which form part of a structure. From the earliest times observance of human scale has seldom been abused.

From this elementary rule has been developed the proportions accorded to all architecture. By observance of natural effects, of great heights, vast distances and huge masses, man became conscious of the majesty which surrounded him; in time he imparted to his own works the quality called monumental. The erection of simple monuments led in turn to an appreciation of balance; finally there came an understanding of the principles of axially and symmetry. From the outset it is clear that fine architecture was not merely utilitarian, but pertained to an intellectual ideal. It was the æsthetic sense that predominated not only at the inception but in the resultant effect. The appeal to the visual sense was maintained in every advance made towards definite style in building. For example, the introduction of door and window openings led to contrasting effects of voids and solids. The repetition of a unit invoked rhythmical grouping or created focal points. The realization of the need for sympathetic ordering of detail encouraged technique and craftsmanship, which conjointly gave due prominence to the treatment of surface. If the principle of symmetry is associated with the earliest attempts to achieve architecture of expression, the equally important principle of asymmetry must not be ignored. In the preceding can be seen a realization of expedient, as well as the discovery of two important laws of composition, namely, balance arising out of symmetry or asymmetry.

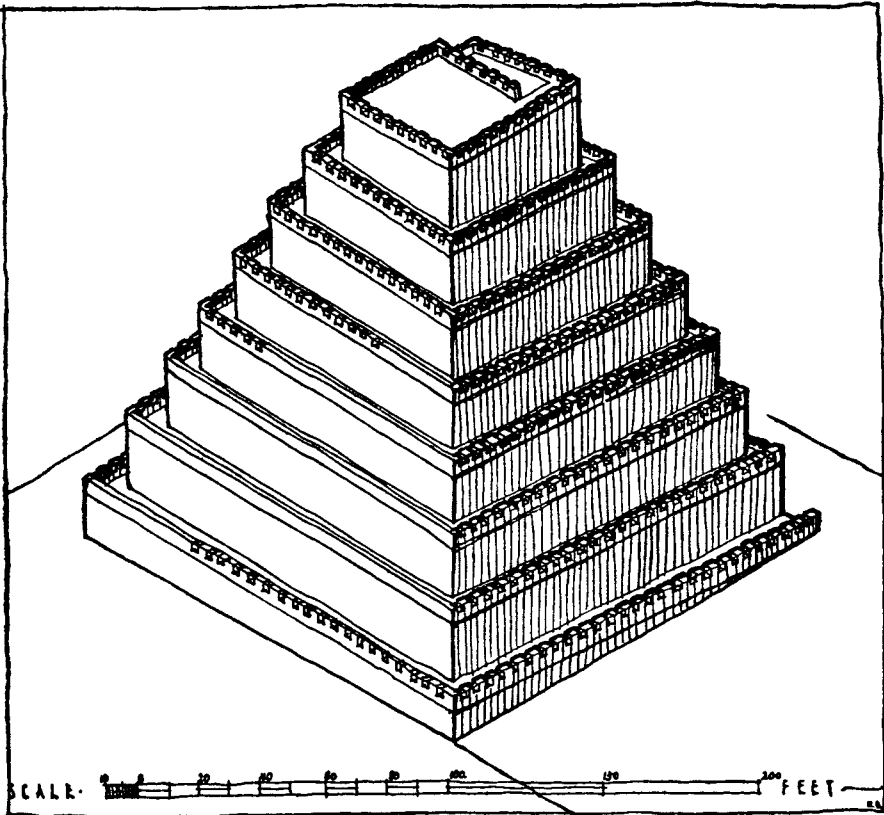
Of the essentials of fine building, stability is that aspect of construction which best conveys to the eye the nature and assembling of the materials employed; while convenience is the fulfilment of the scope of a particular building.

Perfection of arrangement in the various parts of a building produces both character and beauty. The latter essential, however, is seen to be

A SUMMARY OF ARCHITECTURAL COMPOSITION IN THE PAST

a variant affected by the trend of current ideas. These above-mentioned qualities are to be found at all periods and pertain to all styles. Style in architecture may have a twofold implication. In the first place it may arise from a local or a national tradition; secondly, it may arise from the character imparted to a composition by a forceful personality.

The study of archæology is interesting in itself as it throws light upon the first attempts of man to build. Materials were selected and assembled in the crudest fashion; great stones were set up for burial and ceremonial purposes; but architecture as a plastic art did not emerge until the time of the early civilizations which flourished on the banks of the rivers of Mesopotamia and Egypt.



TYPE OF ASSYRIAN ZIGGURAT

SINGLE-RAMP EXAMPLE

Pyramidal composition, the ramp ascending continuously on four sides to the climax.

THE ART OF ARCHITECTURE

With the establishment of organized communal life the needs of man became more complex. We encounter the beginnings of architectural character in types of edifices such as fortifications, palaces, religious and funerary monuments. These plastic forms always evolved within the frame of local conditions and the limitations of the materials employed. If geography was important in the selection of centres of settlement for human habitations and the growth of cities, geology also played no unimportant part in offering material for immediate use.

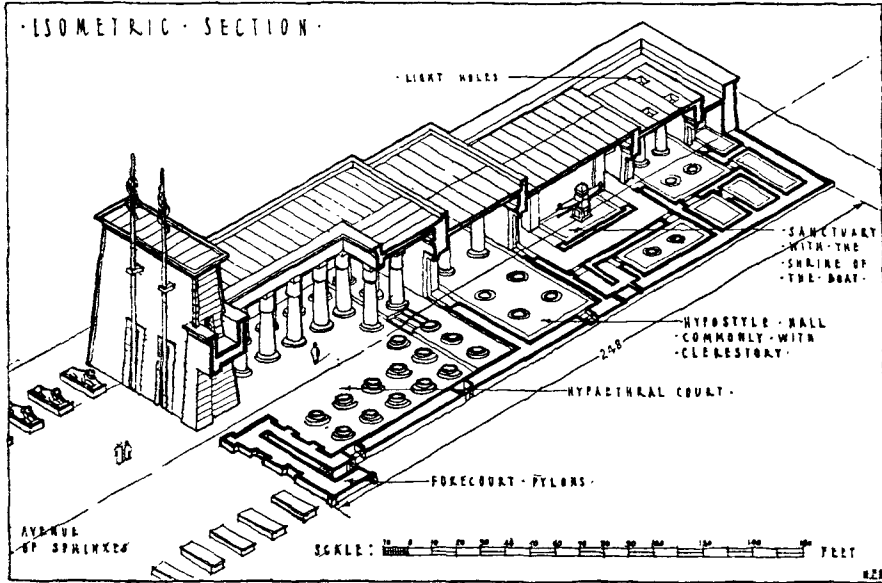
In the land of Chaldea, the particular nature of the soil tested the ingenuity of the people and eventually led to the manufacture of burnt and sun-dried bricks for building. The brick walls of all structures had perforce to be massive to receive the thrust of the crudely formed vaults of the same material. The scarcity of wood in effect imposed the invention of the vault and the principle of cellular formations in planning. Protection from inundations from the great rivers made vast platforms and terraces necessary. The dual purposes of encircling walls for defence and convenient elevation above the plains were realized. The architecture of Mesopotamia represents the absolutism of warrior kings able to command unlimited slave labour. To enumerate the features of Mesopotamian art: brick construction for massive walls without foundations, the fabric of the walls bonded vertically, absence of plastic effects in the treatment of vertical supports, and development of ceramics and sculptured stone slabs to protect inferior massed materials. From the remains of platforms, palaces, mounds and ziggurats can be obtained ideas of the scale of the vast agglomerations of streets and houses. In the stepped ziggurat is to be seen the earliest expression of conventional vertical structure attained by receding planes. There was a total disregard of the need for internal space in these structures, which were devised for ritual and symbolic effect.

In Egyptian architecture the monumental character is dominant. There is advance in design towards the systematic establishment of basic architectural forms; the triangular effect of a pyramid, the rhythmic uniformity of colonnades, the method of clerestory lighting, the grandeur of wall surfaces, the general symmetrical arrangement of plans, constitute precedents which have defied time. It is the profundity of Egyptian architecture prevalent in temples and tombs that demands homage.

For the purpose of analysis there is no better example of the obser-

A SUMMARY OF ARCHITECTURAL COMPOSITION IN THE PAST

vances of definite principles than the perfected Egyptian temple. It is clear that these vast structures were not conceived in an utilitarian spirit, but were designed and endowed with the formulæ of religious beliefs. The observance of dramatic sequence in the plan, where a whole assemblage of courts leads to the secluded precincts of the sacred shrine, adds to the mystery of the ancient religious rites. It must be borne in mind, however, that the external treatment is so constituted as to convey the



TYPICAL FORMATION OF AN EGYPTIAN TEMPLE

TEMPLE OF KHONS, KARNAK

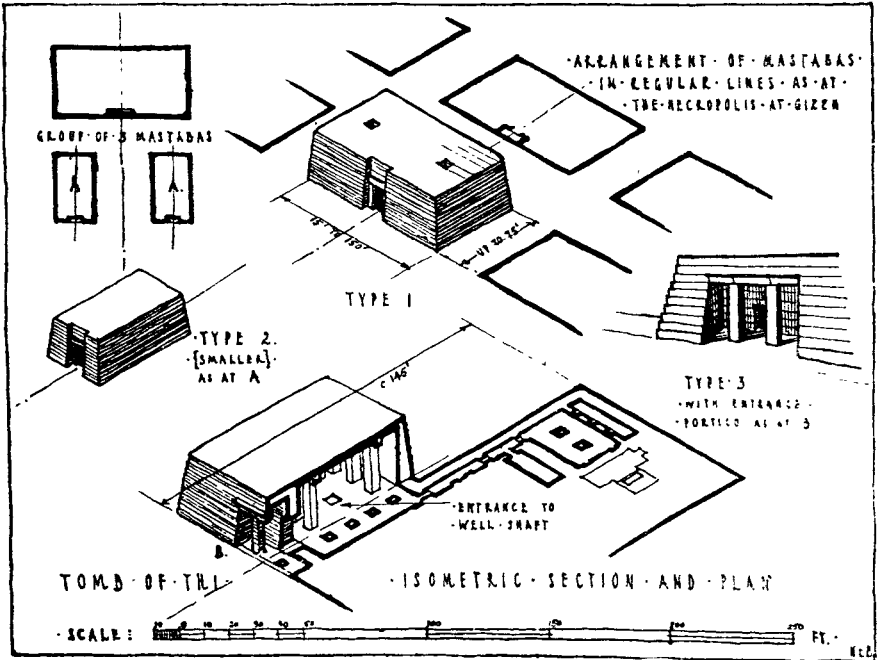
An example of axial planning with transitional stages from the climax in front to the sanctuary and secret cells. Designed to impress the multitude outside the precincts.

impression of a stupendous entity. It is as though the character of the colossal portal pervades the whole external design. Yet even in this, the eye is directed to the climax by the symmetrical arrangement of sphinx avenues and obelisks. The representations of battle scenes outlined on the vast surfaces of the masonry are of secondary interest.

The deliberate observance of the long axis of the great rectangular group of colonnades, hypostyle and pillared halls, had for its principal object the screening by stages of the more sacred enclosures beyond.

The subtle change from the brilliance of the Egyptian sunlight, the play of light and shade on the coloured decoration, could not fail to impress.

The monumental qualities of these great structures do not vary; there is the same general observance of trabeated construction. Bricks from the Nile mud, granite from the Libyan desert, basalt from remote quarries, provided the materials essential to the realization of stylistic forms. Of the decorative elements the lotus, papyrus, palm and mask capitals are



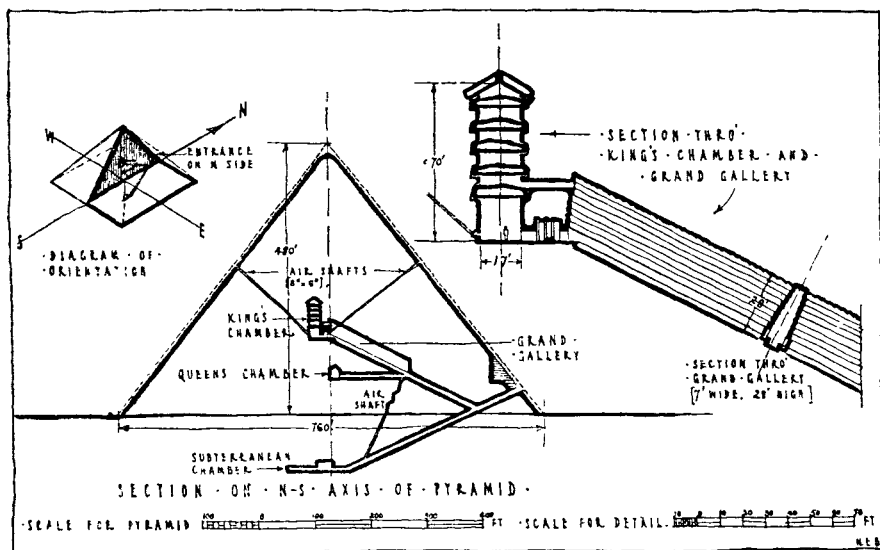
THE EGYPTIAN MASTABA
FUNERARY TYPES DERIVED FROM PRIMITIVE FORMS

the most distinctive. The principal Egyptian mouldings, the cavetto and roll, demonstrate the survival in secondary form of a remote structural prototype. In this remembrance of early achievement is to be seen the persistence of tradition.

The treatment of the rock-cut tombs and temples comes within a different category. Here we are provided with a key to the mystic side of architecture. At Abu Simbel colossal seated figures, grouped in pairs, form the principal feature of the design. Compositions of this type

A SUMMARY OF ARCHITECTURAL COMPOSITION IN THE PAST show a predilection for stupendous and awe-inspiring statuary guarding precincts formed in the living rock.

Among other architectural elements contributed by the Egyptians, the obelisk or needle is the most singular. Here is encountered a monumental feature, the origin of which is obscure, the purpose being entirely commemorative. But at the same time the decorative value of this feature was well understood. At a later period its adoption by the Romans in a modified form led to the invention of columns of victory.



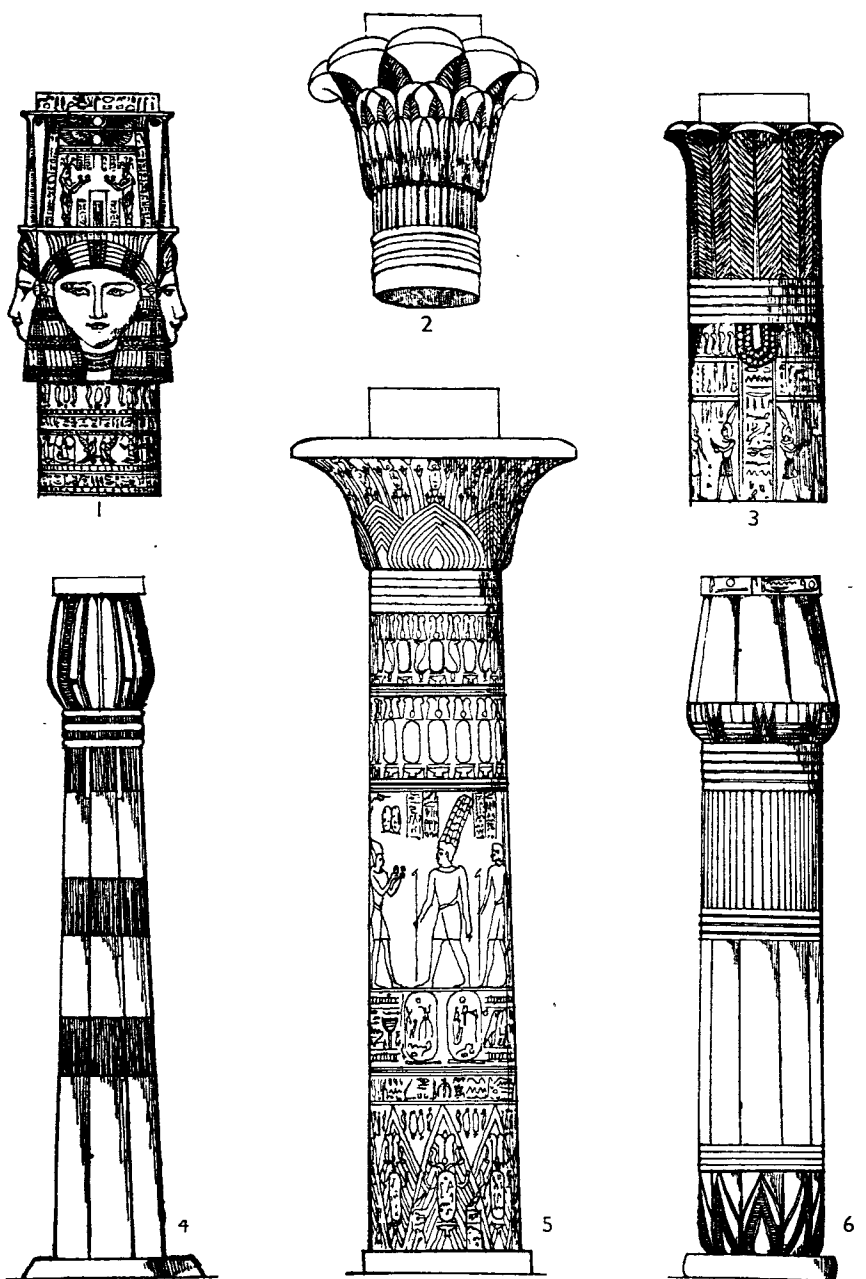
THE GREAT PYRAMID OF CHEOPS, GIZEH

The complete single-unit formation giving the exact sense of stability.

The importance of tradition in architecture is exemplified in the temples of Edfou and Denderah, buildings erected in the Ptolemaic period.

And yet this architecture, of all architecture the least affected by external influences, has provided the whole world with systematized principles that have survived the passing of time. Not only did the Egyptians understand perfectly what expression in design implied, but they grasped the theory of the subordinate element in relation to the ensemble.

Their architecture produced forms and details in which convention preponderates. Theirs was essentially a stylistic expression. Not only did their architects and artists understand sculpture and its combination



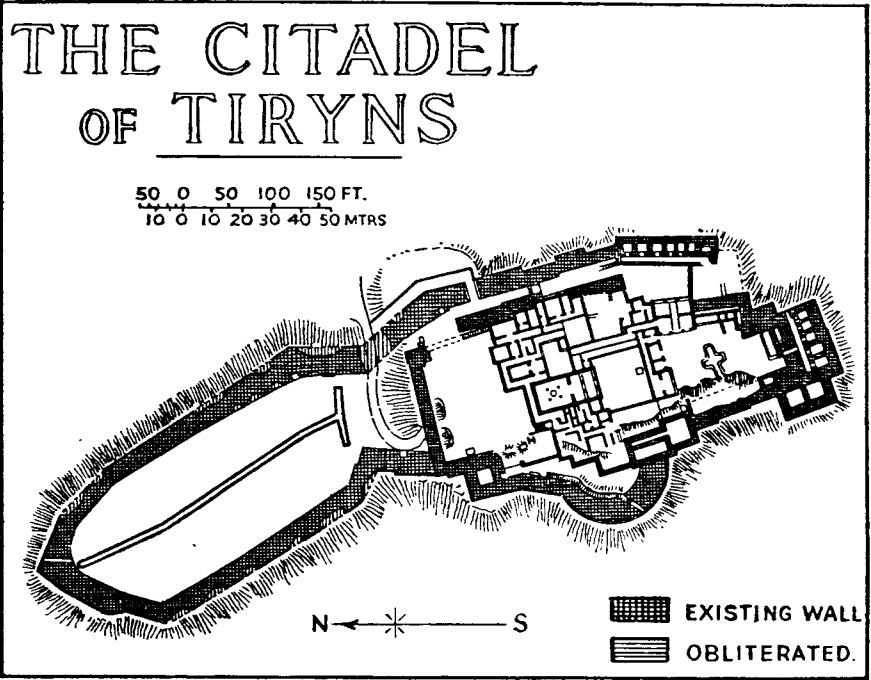
EGYPTIAN COLUMNS AND CAPITALS

1. Hathor Capital. 2 and 3. Palm-leaf Capitals.
4. Lotus-bud Capital. 5. Bell-shaped Capital. 6. Papyrus-bud Capital.

A SUMMARY OF ARCHITECTURAL COMPOSITION IN THE PAST with great buildings, but the exact manner of its application and treatment.

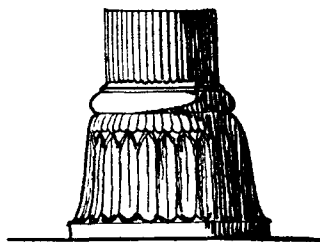
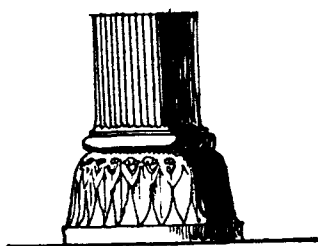
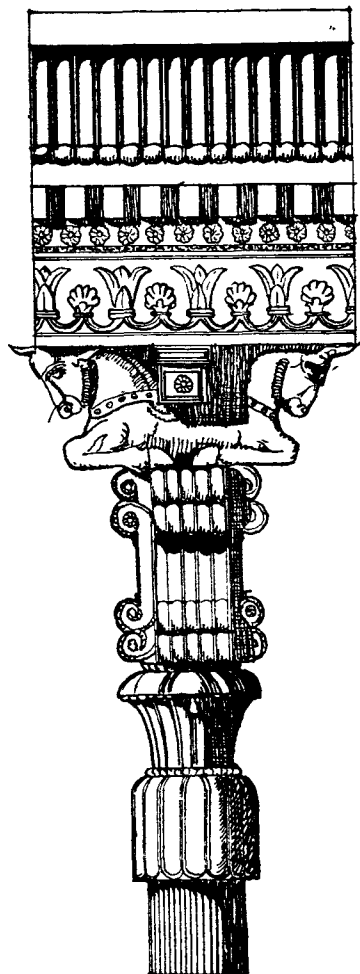
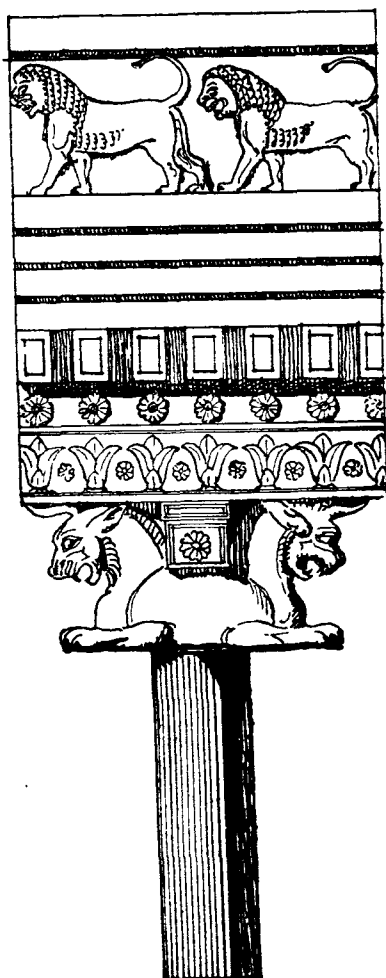
As Egyptian art through its long development was a vindication of first principles, so it recorded the fluctuations of national life during a span of forty centuries. Grandeur of silhouette and suppression of unnecessary details are its chief lessons.

The next reference concerns the activities of the pre-classical peoples grouped around the Mediterranean basin. Here a manifold paradox is

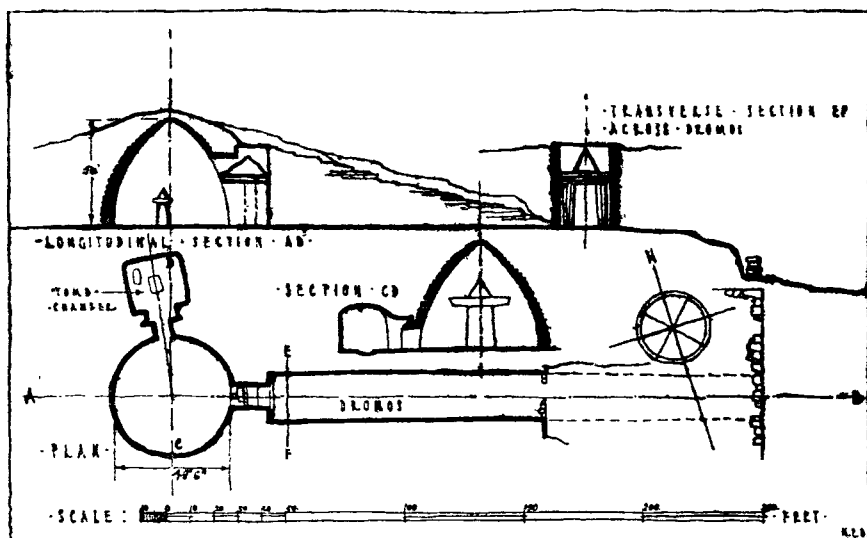


encountered, because while these peoples made a not illiberal contribution to the evolution of art, they influenced the art of neighbouring countries through trade intercourse. Crete became the pioneer of the maritime states, and through contact with Mycenæ and Tiryns archaic Greek art was fertilized. Further, the rise of the Persian Empire on the ruins of old Babylonia and the subsequent wars in Ionia and Greece welded the Hellenic peoples and gave ascendancy to the Athenian ideal.

In the Greek temple is to be seen the ultimate realization of the trabeated system in masonry. Here can be viewed the joint results of



EXAMPLES OF PERSIAN COLUMNS AND CAPITALS



THE TREASURY OF ATREUS, MYCENÆ

A composition relying for effect on the completeness of the geometrical form.

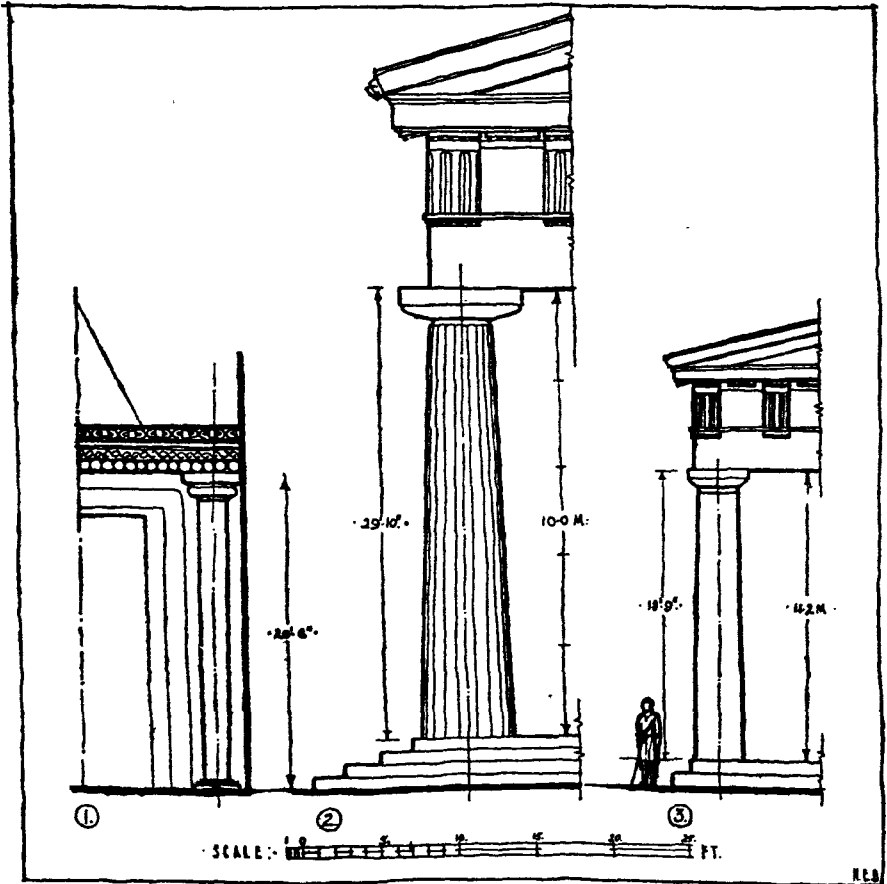
experience and inspiration, concentrated on the perfection of support and lintel and the logical realization of ensemble.

In the Doric, the Ionic and the Corinthian orders we find standardized elements of construction which have not been surpassed. These elements, representing in some instances secondary renderings of primary forms, also convey the impression of being contributions from different branches of the Hellenic race. In fact, the Greeks not only achieved originality of temple building but endowed posterity with principles of æsthetic values in design. In Greece the standardization of architecture was national and self-contained.

Not only did Greek art flower with great rapidity, but it remained beautiful in its decline and eventually transmitted its spirit to Western civilization. The principles of Greek architecture begin with selection of appropriate sites, originally for defence, as can be seen in natural platforms, for temple enclosures, and in the case of theatres the sides of hills. While the temples have external uniformity, the principle of asymmetry was also occurrent as in the case of the Erechtheion. The monumental in Greek art is attained not by stupendous mass, but results from the perfection of parts and their incorporation into an harmonious whole.

THE ART OF ARCHITECTURE

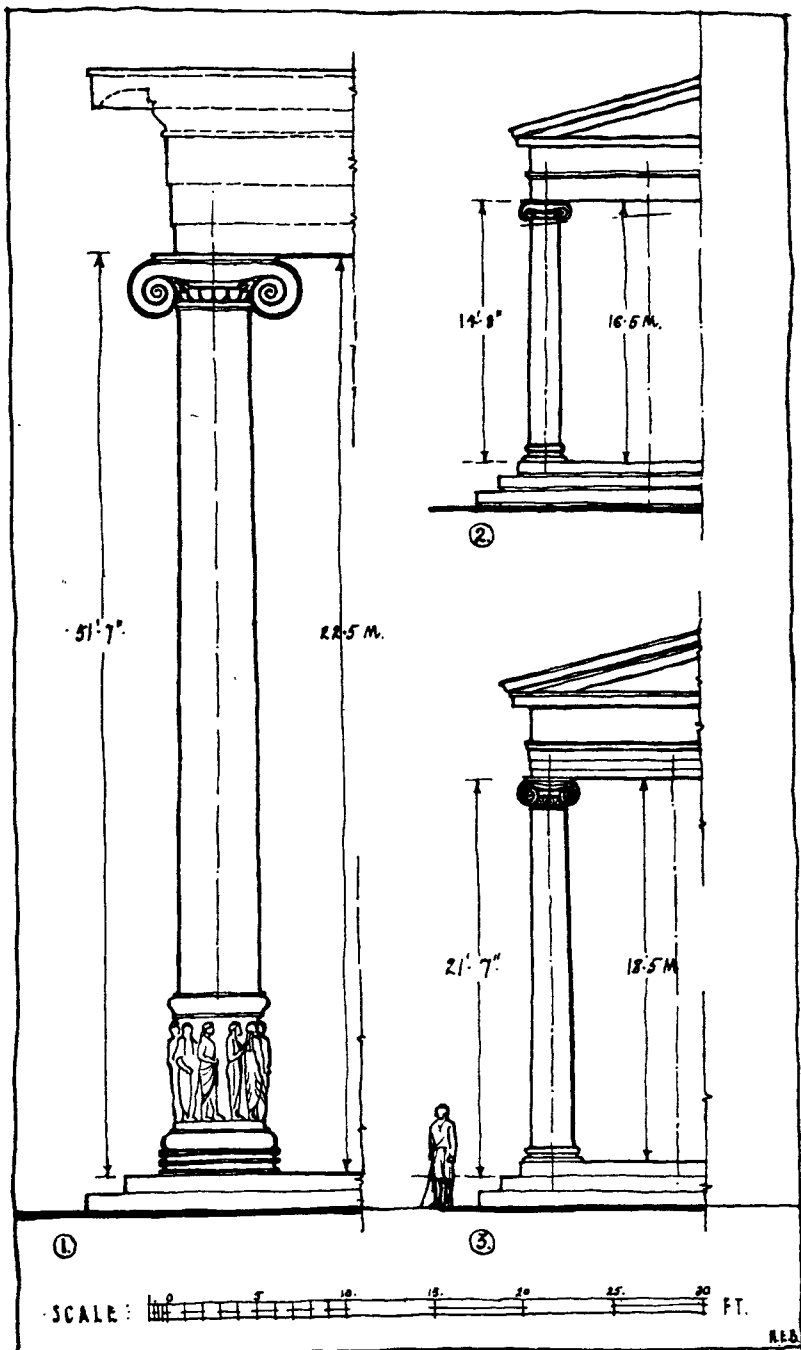
Greek architecture is successful by reason of the clear exposition of the structural parts. For example, the stereobate expresses the foundation upon which the building rests, the column and the continuous lintel call attention to the principle of vertical and horizontal construc-



THE DORIC ORDER

1. TREASURY OF ATREUS, PROTOTYPE. 2. ARCHAIC. 3. MATURED.

tional members. The pediments at each end indicate the roof and serve as terminating features. The ornamented parts and the sculptured incidents are invariably in subordination to the oneness of the building. The remainder of pure Greek architecture connotes the open-air theatres, the stadia, the treasuries, the gateways, the altars and the shrines.



EXAMPLES OF GREEK IONIC ORDERS
With threefold divisions, i.e. Base, Shaft and Crowning part.

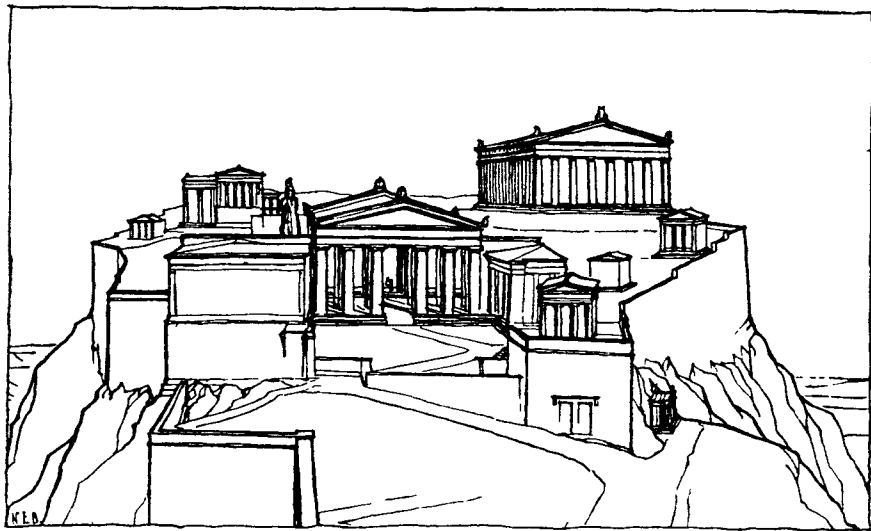
In these works we see an extension of the principles attending the construction of the great temples. In fact, all are explanatory of the facets of Greek society. The deliberate use of straight lines to emphasize the true direction of support, and all evolved forms of architecture, imply construction and rhythmic repetition. The powerful optical effect is enhanced by the simplicity of the main and subordinate lines of the composition, the refinement is achieved by subtle curvation in the crepidoma and by the entasis of the columns and the inclination of the vertical axes.

The architectural massing is always adapted to the field of composition, namely, the site. The plan balanced round a central axis is surrounded by a unifying element, the colonnade, best appreciated in perspective. The effect of grandeur is obtained not by the forced exaggeration of one predominant element but by the balanced proportions of all subdivisions in plan as well as in elevation. The threefold division of base, supporting shaft, or wall and supported entablature, or crowning part in a building, are closely related to each other in their proportions, resulting in the Greek canon. In the temple we have the crepidoma leading to the colonnade of the pronaos, the columns adjusted to obviate perspective distortions, the visual tableau being closed by the pyramidal formation of the pediment, which is a constructional necessity forming the natural abutment or gable to the roof. In such designs there is no desire to astonish by volume or size, but rather the suggestion of balance and refinement appealing only to the educated mind. Unity and harmony are the two primordial principles evidenced not only by temples but by other buildings in Greek architecture. To these we may add adaptability or fulfilment of purpose, the best example to be found being the Greek theatre hollowed from the hill, so as to provide a natural understructure to the kerkides—the whole lines of the composition converging towards the focal point of interest, namely, the skene. There is no daring and sustained effort, but just a logical adaptation of a site towards a definite purpose. Such attributes in architecture are to be found in all good building irrespective of period or style. A building relying on its utilitarian merits alone loses its force when deprived of æsthetic values of which it is an inseparable part.

What might be termed power in composition belongs to the great monuments of Greek art. Here the emancipated spirit of reason and order becomes conscious of its high purpose.

A SUMMARY OF ARCHITECTURAL COMPOSITION IN THE PAST

The chief qualities of Greek ornamentation are sympathy to the surface adorned, and careful regulation of scale. In the enrichment of mouldings, capitals and bases the conformation of an ornament is in keeping with the form and structure of the part enriched. The complete subordination of the enrichment is not achieved, but at the same time extra elaboration is never carried to excess. In this is demonstrated one of the most striking principles in the art of architecture. The application of

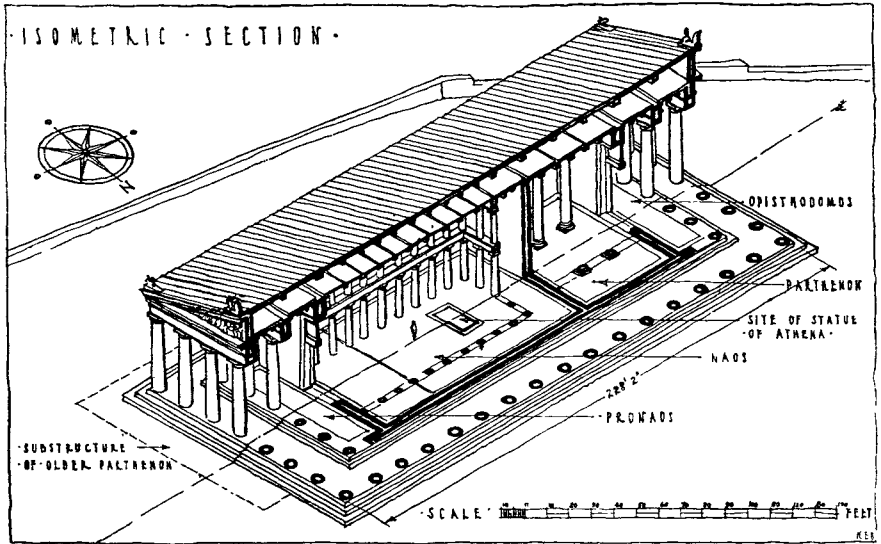


THE ACROPOLIS AT ATHENS

Asymmetrical grouping suited to the natural formation of a site. Effect produced by balance of volume and silhouette of masses.

colour and its restriction to a limited series of tones was also an aid to style.

The characterization of the Greek national ideal in the concrete belongs as much to the art of the sculptor as to the architect. Whereas in the building of temples the abode of the Gods in the midst of men was symbolized, the sculptures aimed at the portrayal of the celestial hierarchy for all men to comprehend. The inclusion of mythical and national heroes, the representation of realistic combats and civic processions go far to assert the intensive vitality of Hellenic life. The sculptor in his grand labours now complemented the results of centuries of architectural evolution. The culmination at Athens in the Age of Pericles gathered



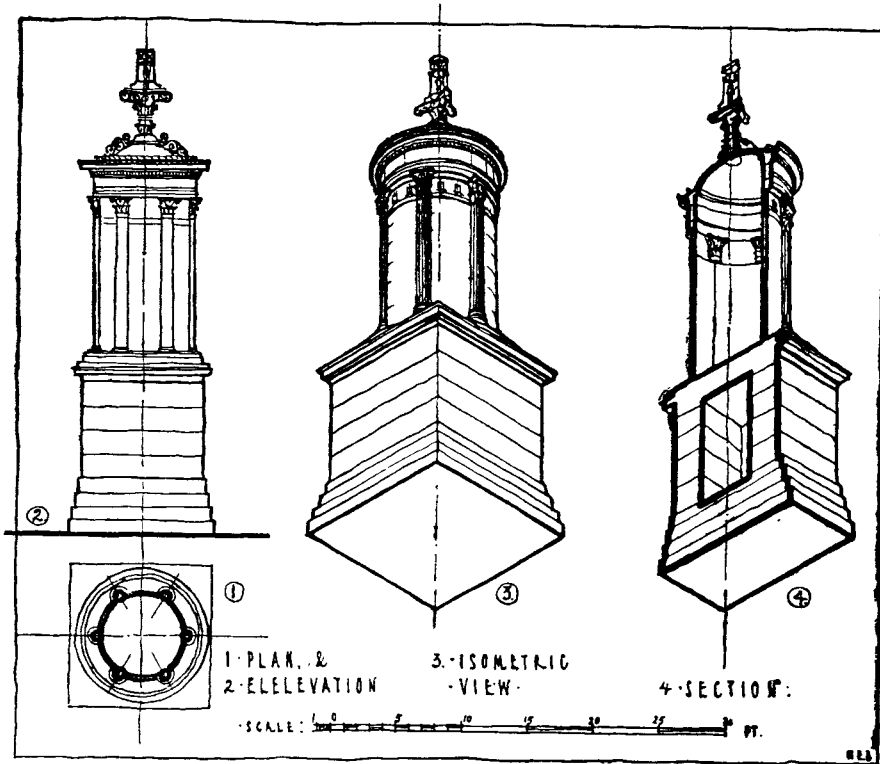
THE PARTHENON, ATHENS

A rectangular frame enclosing rectangular shapes. The effect of the ensemble results from the repetition of the columnar unit.

the best that Ionia and the Greek colonies could offer. In all this there was demonstrated the law of restraint. Never has the famous motto written at Delphi “Μηδέν ἄγαν” (in all things moderation), been so justified.

Rome, the natural successor to Greece, combined the Etruscan heritage with the Greek influences which radiated from the Archipelago, Asia Minor and Sicily, at a time when Mediterranean supremacy was in process of transition. A great architecture was destined to arise, not of rare and surpassing beauty but expressive of conquest and organization. Its earliest manifestations are found in Rome itself. In the Eternal City were enacted the last scenes of the great cycle of classical art and culture. In the conquest of Carthage, the plunder of Greece, and the subjugation of Egypt, Rome proved her destiny as mistress of the known world. From the plains of Mesopotamia to the forests and swamps of Britain the Pax Romana imposed a quasi uniform type of official architecture. The Greek orders were adopted and adapted to new purposes, but a complete revolution in planning and devisement was rendered necessary by the development of the arch and the vault. It was, however, the

A SUMMARY OF ARCHITECTURAL COMPOSITION IN THE PAST superior constructive skill in the use of concrete and massed materials that led to fresh inventions in geometrical planning. Roman temples were not the most important of the public buildings. In point of size alone the basilicas, the amphitheatres, the theatres and the baths are remarkable.



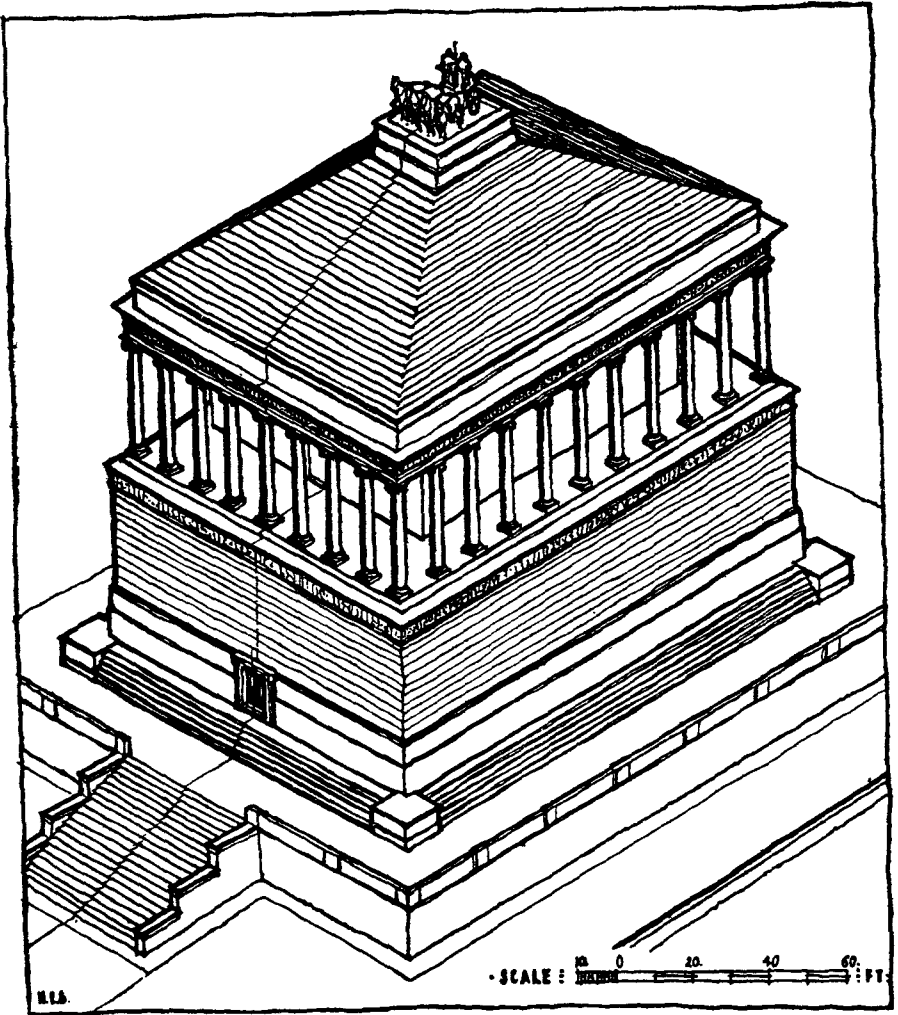
THE CHORAGIC MONUMENT OF LYSICRATES, ATHENS

AN EXAMPLE OF UNIFIED COMPOSITION

Showing sympathy of parts and contrasts, i.e. podium and circular body.

The gamut of Roman architecture includes fora, triumphal arches, pillars of Victory and tombs, as well as such utilitarian edifices as the aqueducts and bridges. In all this parade of building the travelled citizen beheld the grandeur that was Rome.

The Roman columnar style is entirely founded on Greek, either through direct or indirect influence; three characteristic features, the arch, the circular plan and the podium, are definitely Etruscan in origin.

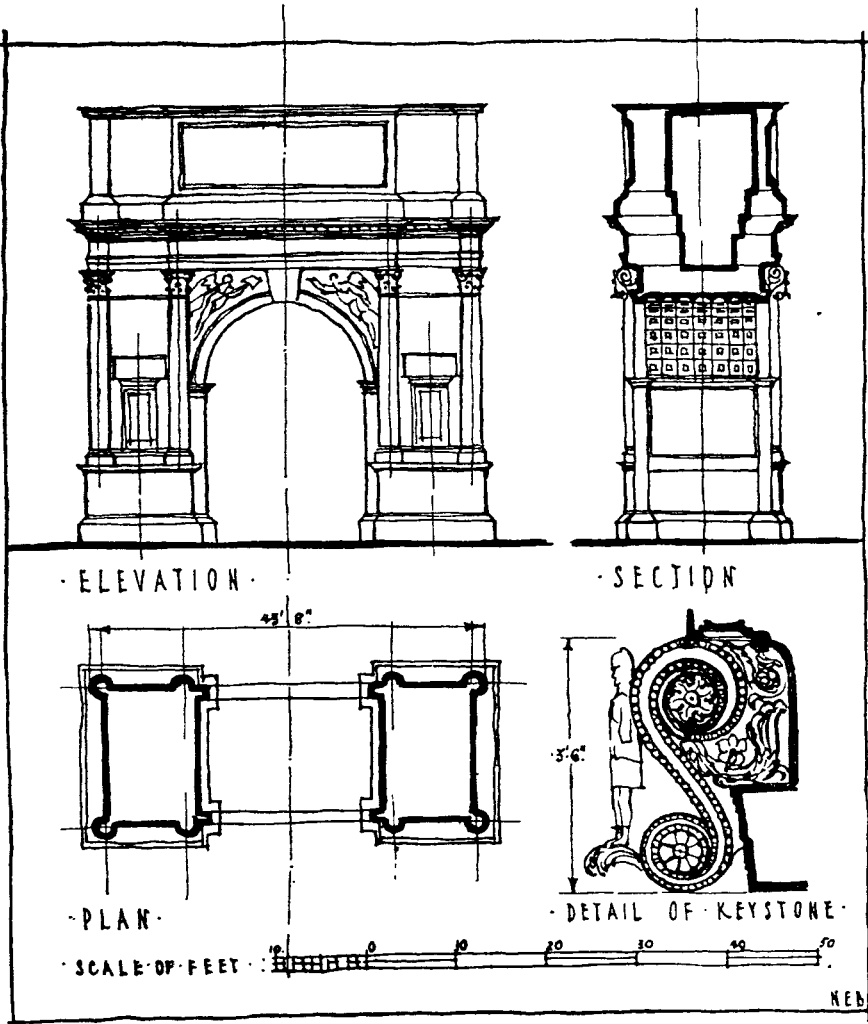


THE MAUSOLEUM OF HALICARNASSOS

CONJECTURAL RECONSTRUCTION

An example of pyramidal composition with threefold subdivision of podium, order storey and crowning part.

From the development and combination of these motifs came the matured style of Imperial Rome. It will also be shown hereafter that the adoption of a specified mode of construction determined the ultimate monumental expression.



THE ARCH OF TITUS

ELEVATION
(See Perspective.)

The division of portico and cella survived in the Roman temple plan, but the interior of the naos was left unobstructed, as for example at the Maison Carrée, Nîmes, or the temple of Fortuna Virilis at Rome. The main departure in the treatment of the temple plan is to be seen in the

abolition of the pteroma, the widening of the pronaos and the introduction of the flight of steps rendered necessary by the high podium. Such arrangements gave great importance to the long axis and due stress on the front elevation. These dispositions were not solely due to fanciful arrangements, but were necessitated by the fact that Roman temples

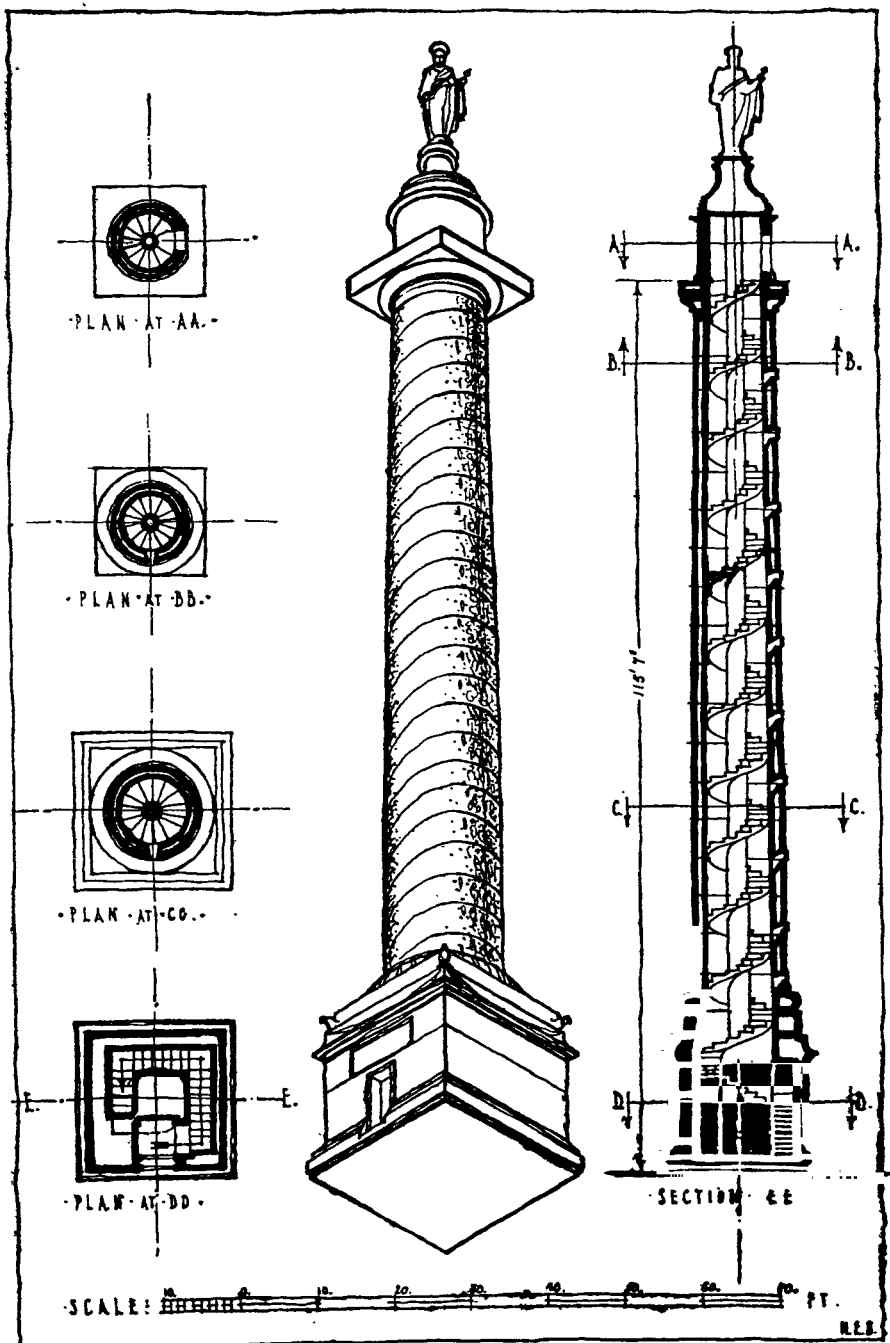


THE ARCH OF TITUS, ROME

AN EXAMPLE OF AN ARCH FRAMED BY PYLONS AND CROWNING ATTIC

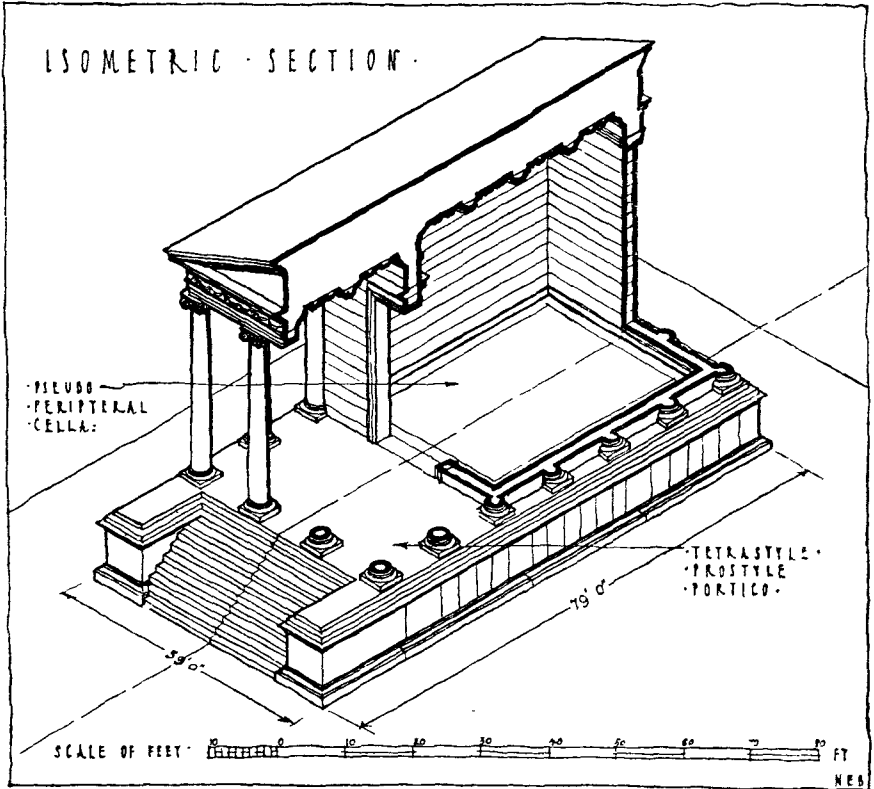
The ensemble is accentuated by the right distribution of projecting features, i.e. vertical and horizontal.

were usually erected in crowded fora, restricted areas, or against high walls. The designer, therefore, had only the choice of concentrating all the interest of the composition in the front treatment of the temple. The predominance of one axis is generally to be found in all Roman plans. Most notable of all in the plans of the Thermæ of Caracalla and Diocletian, there is an absolute symmetry on either side of the major axis. That this principle of axiality was intentional is obvious, as in perspective it is impossible to perceive more than one or two rooms at a



THE COLUMN OF TRAJAN, ROME
AN EXAMPLE OF NEEDLE FORMATION

time. This system of continuity of axis was also to be found in the sympathetic arrangement of the minor axes, often all the openings being on a continued line. To what extent this architectural system prevailed at later periods may be seen in the plans of Diocletian's palace at Spalato, and afterwards in the plans of the Renaissance.



THE TEMPLE OF FORTUNA VIRILIS, ROME

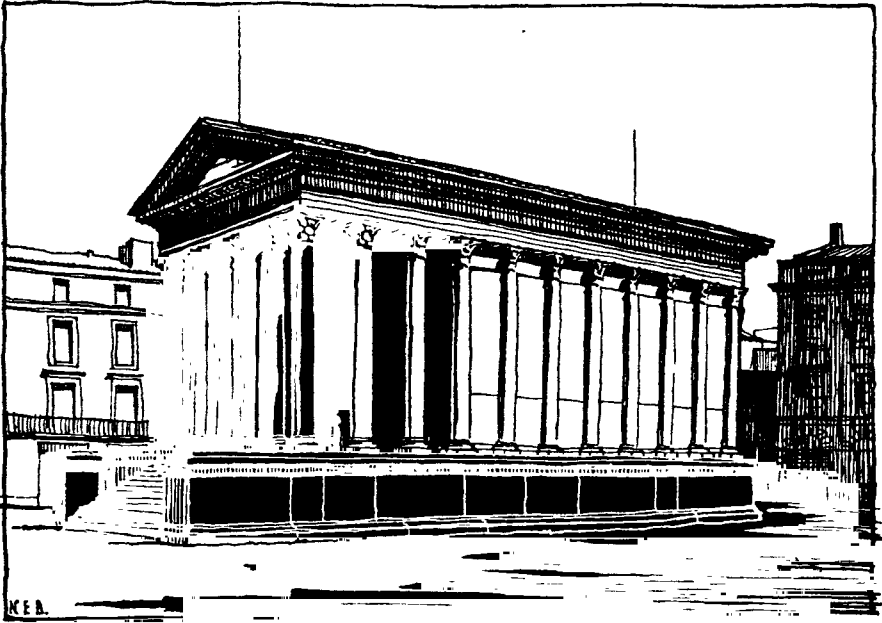
A TREATMENT OF COLUMNAR SUPPORTS FRAMING A CELLA

The composition stands on a podium which is sufficiently low to emphasize the predominance of the main body.

The character, however, of a plan is determined not only by the disposition of the various elements composing it, but also by the system of construction adopted. In the Roman baths the extensive use of the arch and vault determines the proportioning of the walls in an orderly manner and creates interesting contrasts between the sectional enclosing

A SUMMARY OF ARCHITECTURAL COMPOSITION IN THE PAST

walls and enclosed areas, which are at the root of all conventional architecture. To Roman ingenuity is due the creation of plans where every component is not only found at the right place and order, but shape and volume are geometrically proportioned. The skill in planning is shown in the co-ordination of spaces of differing size and circular forms and the adjustment of their opposing features by means of subtle curves.

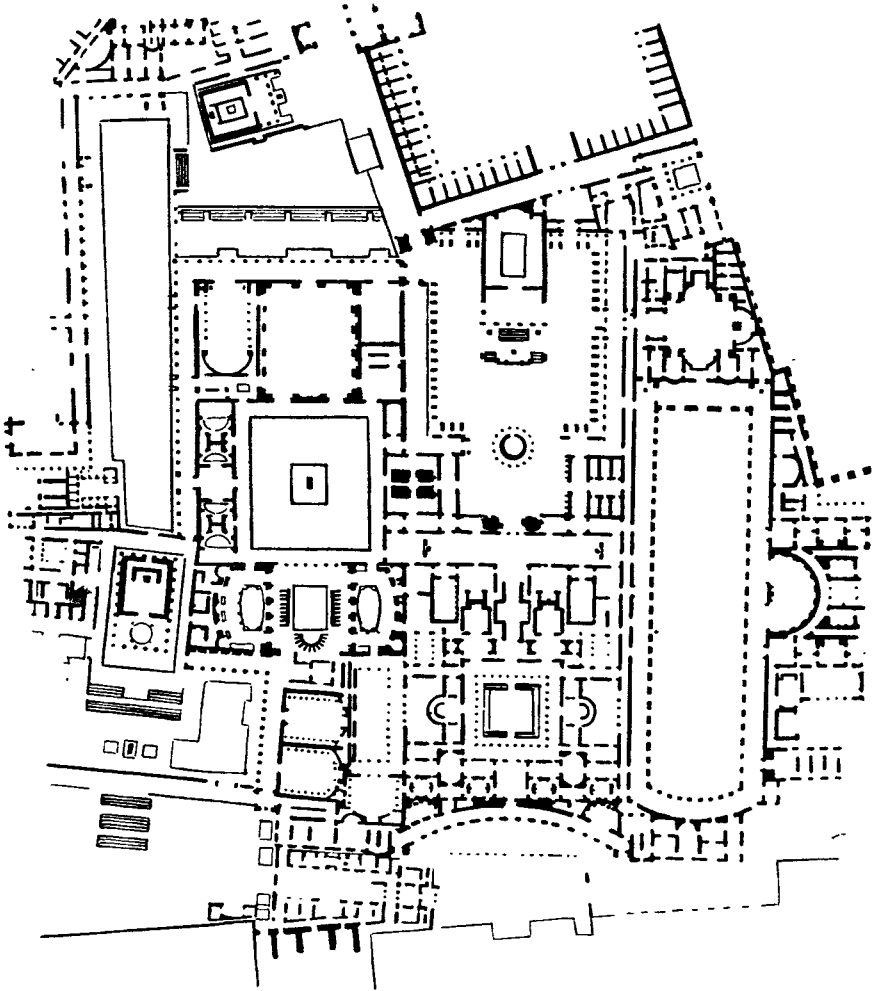


THE MAISON-CARRÉE, NÎMES

PREDOMINANT FEATURE THE COLUMNAR TREATMENT SUPPORTED ON A PODIUM
The repetition of the column binds the composition.

The resultant effect in three dimension led to triumphs of interior perspective. A great planning system arose, one of rare and impressive quality. This was made possible by the adoption of a structural system and massive points of support, the attributes of columns and pilasters forming the unifying theme of style. The same severity and dignified axial arrangements are also introduced in the layout surrounding the Baths.

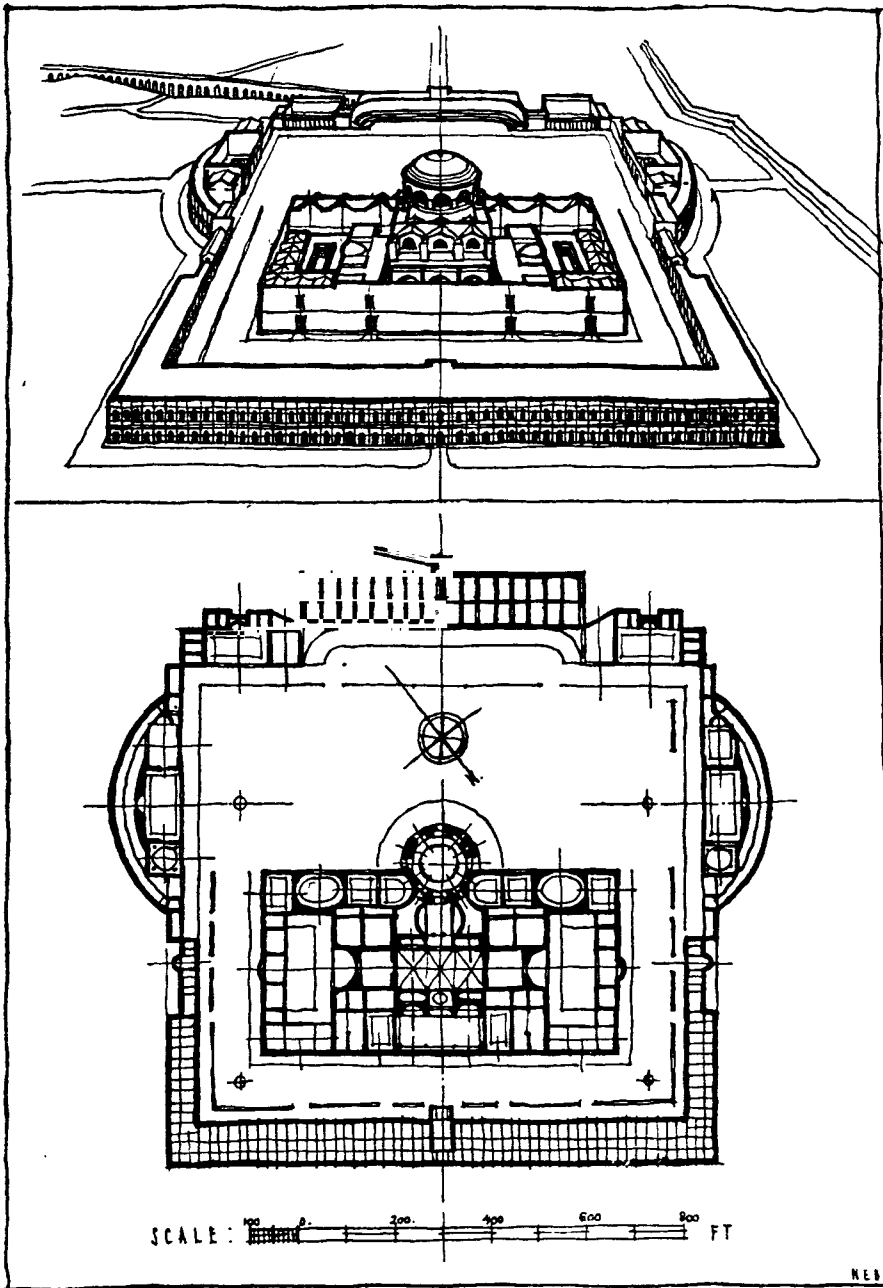
The greatest attempts at simple architectural expression was the elliptical amphitheatre. Among this class of structures the Colosseum is the most



PALACES OF THE CÆSARS, ROME

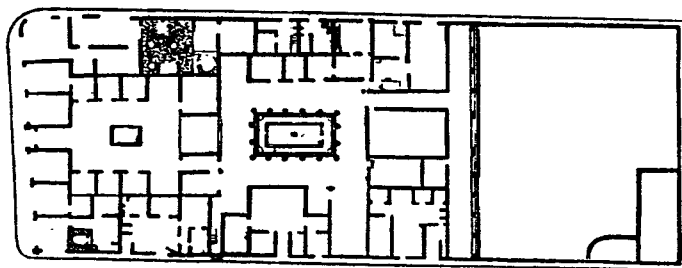
SYMMETRICAL PLANNING ON A CROWDED AND IRREGULAR SITE

stupendous and demonstrates in its plan and construction the principle of unit repetition on a vast, orderly scale. The planning arrangements take full cognizance of exits, entrances, segregation of seats and of sight lines. In its ruined condition can be seen the cellular formation beneath the tiers of seats which reveals the secret of simplicity in formation. In external treatment the Colosseum presents the contrast of arch and

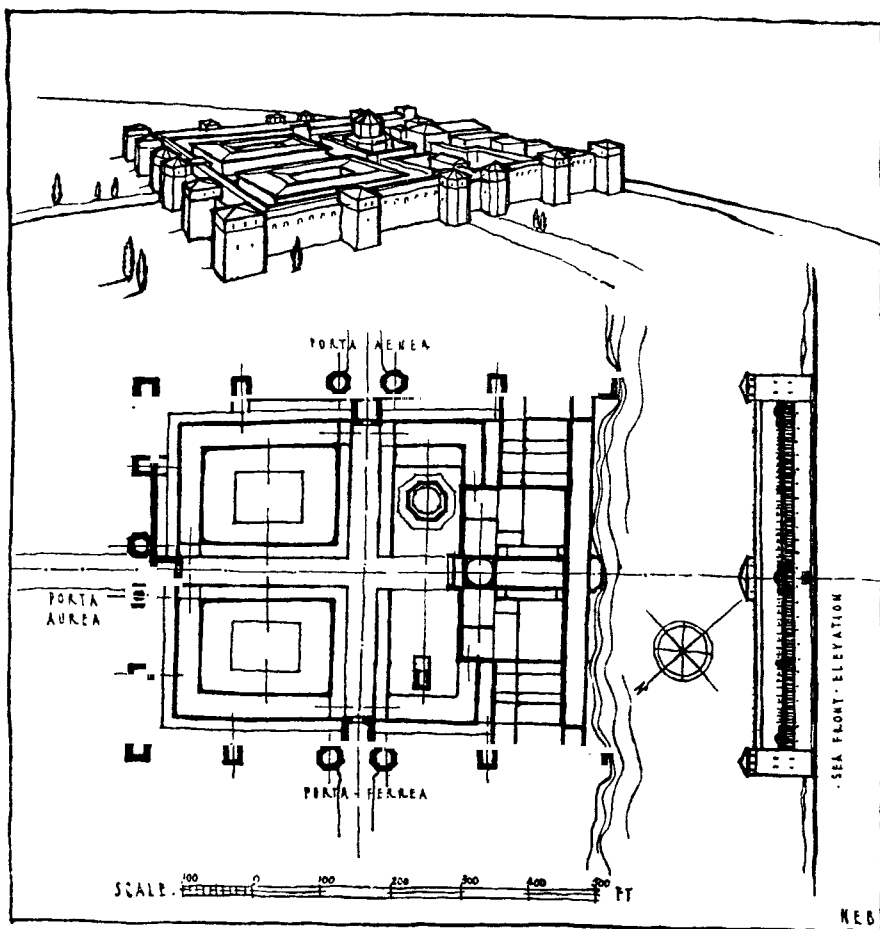


THE BATHS OF CARACALLA

A NOTABLE EXAMPLE OF MONUMENTAL PLANNING ON THE AXIAL PRINCIPLE



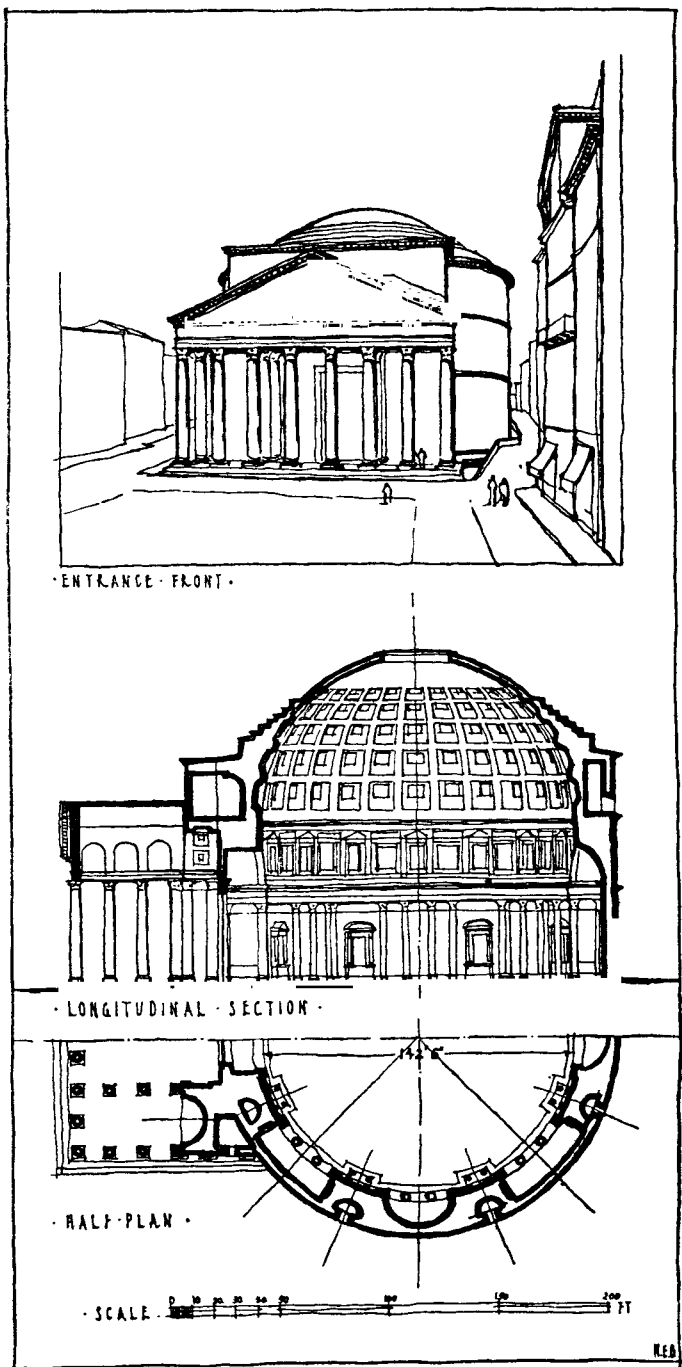
HOUSE OF PANSA, POMPEII



THE PALACE OF DIOCLETIAN, SPALATO

AN EXAMPLE OF MONUMENTAL PLANNING DEVELOPED ON THE CROSSING OF TWO AXES

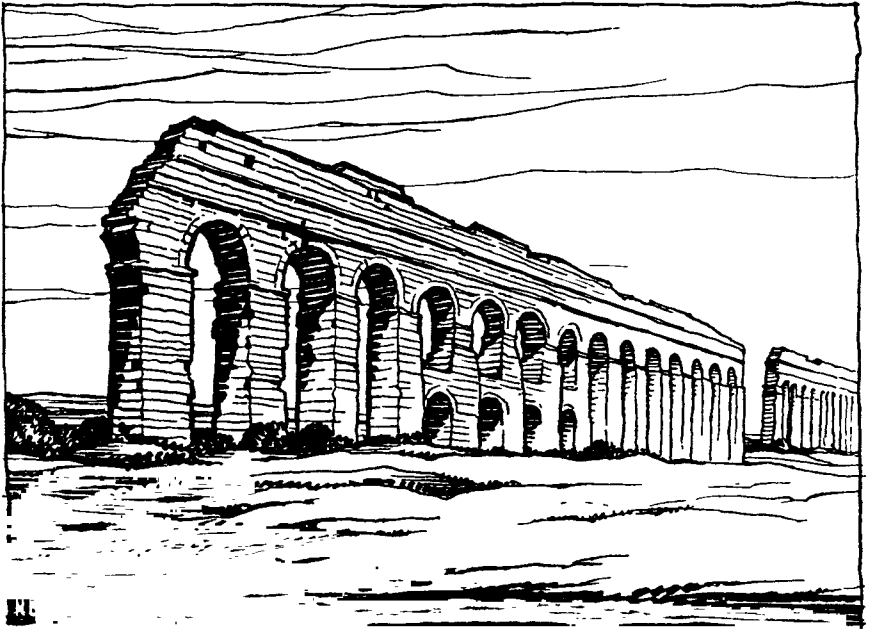
The resemblance to the plan of a Roman Castra should be noted. The horizontality of the layout is expressed in the elevation to the sea-front.



THE PANTHEON, ROME

A TWO-PART COMPOSITION IN WHICH THE CIRCLE IS ATTACHED TO A RECTANGULAR
PORTICO

beam in continuous sequence. The classical orders, which show externally although integral to the surface of the masonry, are subordinate to the arcuations which they frame. The Roman theatre—to name three important examples, Orange, Marcellus and Timgad—presents external arrangements analogous to those of the Colosseum. This predilection for complete forms may be found best illustrated in the circular temples or amphitheatres. For the first the traditional element of the Etruscan



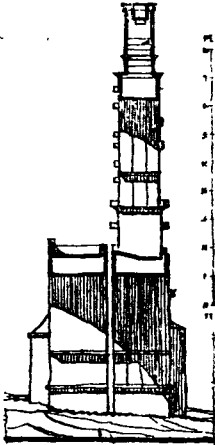
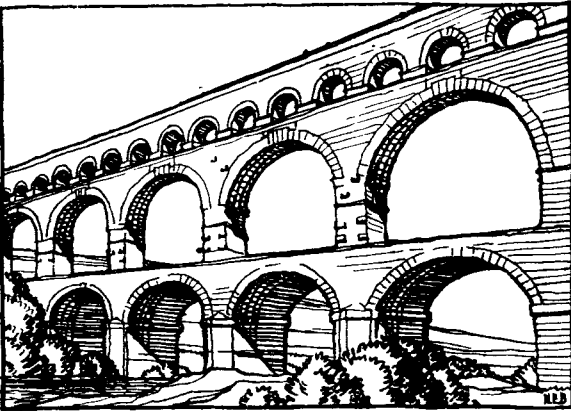
THE CLAUDIAN AQUEDUCT

REPETITION OF THE ARCH UNIT CARRYING A STRONG HORIZONTAL WALL ABOVE
The effect of strength and monumentality is given by the treatment of the masonry.

buildings must not be forgotten, but its perfection is essentially Roman. If the area to be covered is small, the circular plan relies on singularly simplified means for its realization. For instance, the temple of Vesta at Tivoli has only a wall and an external colonnade, and depends on the continuity of the unbroken line for its effect. In the Pantheon, conceived on a much larger scale, can be seen the magnificent example of a dome resting on a circular wall. In this case, however, the supporting wall is subdivided into various elements, not the result of fanciful ar-

rangement, but of necessities arising out of constructional requirements. The lesson to be deduced from an analysis of the Pantheon is that of order and ordonnance. In this case the plastic effects were induced by the special mode of construction, particularly the use of light concrete for vaulting purposes. The importance of the expression of constructional methods, closely associated with selection of materials, created the rationalism which is so prominent in Roman architecture.

The buildings of Imperial Rome relied on the combination and grouping of two constructional features, namely, the arch and the



THE PONT DU GARD, NÎMES

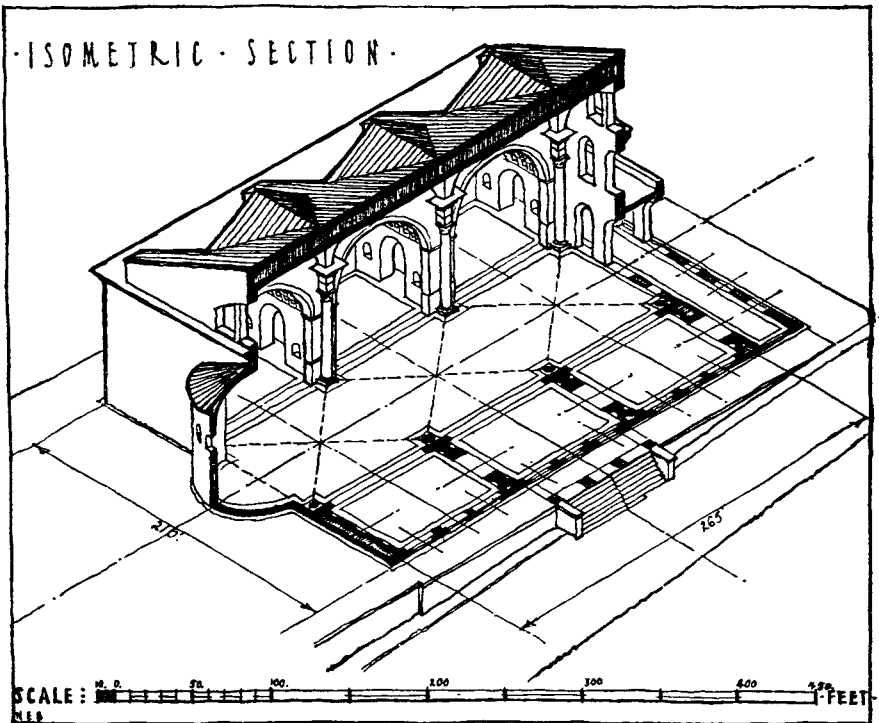
THREE-TIERED COMPOSITION IN WHICH CONTRAST IS OBTAINED BY THE ADOPTION OF A SMALLER SERIES OF REPETITIVE UNITS

The sympathy of the circular forms gives force to the ensemble.

column. From the time of Augustus to the period of decline, the repetition of these features became the basis of grandiose effects. The arch as a purely structural element was employed at a much earlier period, as in the case of the Aqua Claudia. In the design of the Pont du Gard, near Nîmes, the arch is seen superimposed and contrasted with a series of small arches at the top. In this masterpiece of structural masonry the dramatic effect is gained by variation in the proportion of the three tiers of arches, the value of contrasting elements in an elevation being demonstrated.

The triumphal arches, ranging from that of Augustus to the more

ornate arch of Constantine, were definitely examples of monumental composition. Here is instanced the principle of contrast in the size of the arched openings and the value of vertical framing in the form of columns raised on pedestals. The accentuation of the vertical element



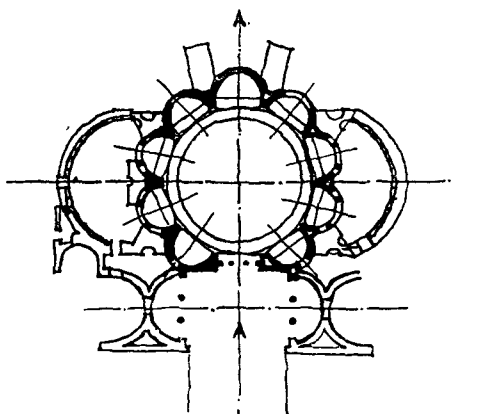
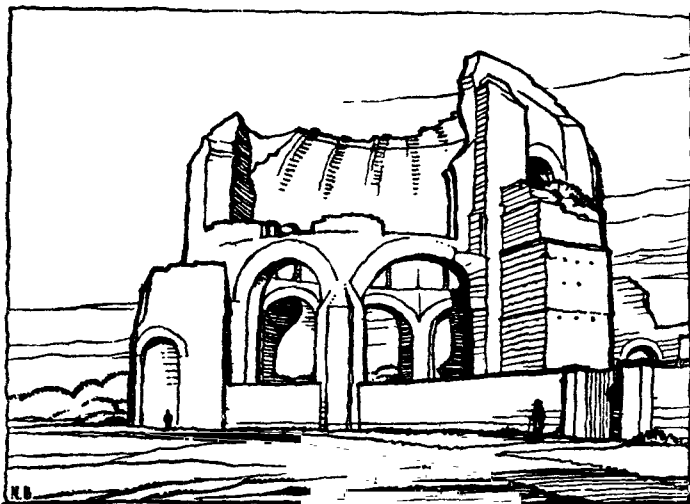
THE BASILICA OF MAXENTIUS, ROME

AN EXAMPLE OF MONUMENTAL PLANNING

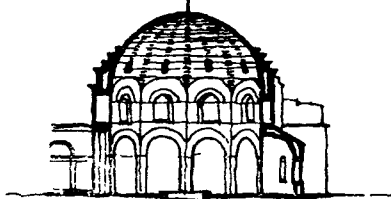
The central dominant volume is supported by the bay treatment of the aisles on either side of main longitudinal axis.

by means of breaks in the elevations is foiled by the horizontality of the attic storey.

The crowning effect of arcuated design in Roman times is best seen in the vaulted basilica of Maxentius. In this ruined but yet stupendous fragment there is the impression of vast space. From the arch and cross vault of this basilica to the vaults and pendentives of the much later Minerva Medica there is but one step farther. As to the other universal



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SECTION AM

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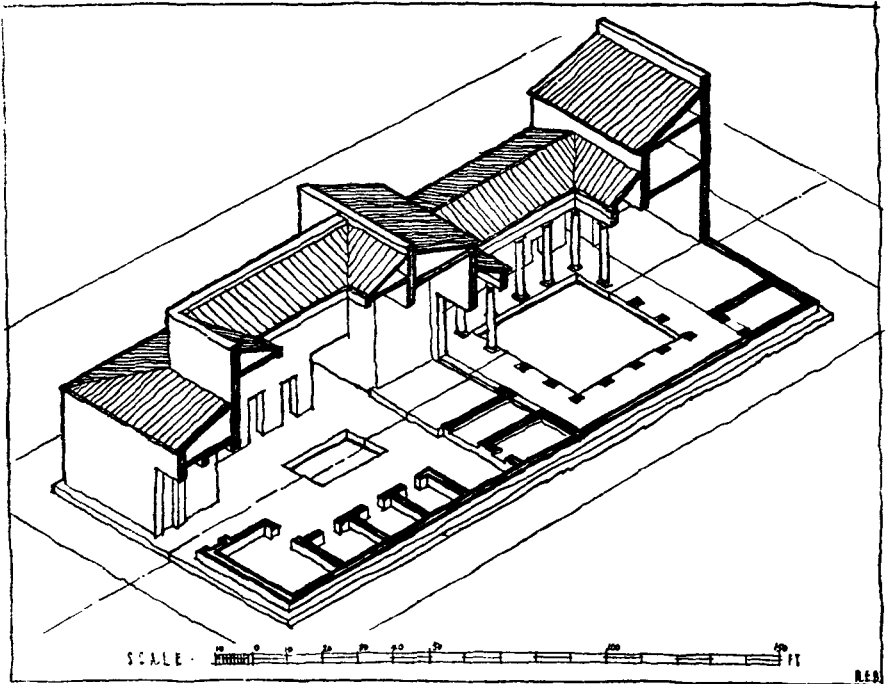
MINERVA MEDICA, ROME

THE NYMPHÆUM OF THE BATHS OF GALLIENUS

A complete geometrical circular form supported by a ring of repetitive features.

THE ART OF ARCHITECTURE

feature, the column, this is to be found in buildings other than temples. At one period columns of varying dimensions formed part of the stock of every mason's yard in Rome. It seems, therefore, that even at this period designers had recourse to stylistic elements not necessarily constructional. In the interior arrangement of basilicas is made clear the orderly arrays of superimposed columns which produced perspective



THE POMPEIIAN HOUSE

AN EXAMPLE OF THE PLANNING OF UNIT OPEN SPACES WITHIN ENCLOSING WALLS

The composition is balanced on either side of a longitudinal axis.

effects; the latter forcing a concentration of attention towards an imaginary focal point. Later in the early Christian Church, developed from the basilica, the focal centre was occupied by the altar.

It is the manifest simplicity of the use of an element such as a column that connotes the secret of fine composition. For example, the plan of the Roman or Pompeian house consists of apartments grouped about a peristyle and atrium, the usual framing of which is a colonnade.



ROCK-CUT TOMB, PETRA

A TWO-STOREYED COMPOSITION

The effect is enhanced by the contrast between the treatment of the upper and lower portions.

Here is evidenced the structural use of the column which also defines the axial lines of the plan grouping, and forms the chief feature of the internal perspective from the prothyron to the oikos, through the tablinum to the painted scenery on the wall of the xystus beyond.

The fora of Rome, ranging from that of Cæsar, Vespasian and Trajan,

THE ART OF ARCHITECTURE

as well as others shown on the marble map, can be compared with the great fora of Pompeii and Baalbek. In each case the resultant composition is that of perspective induced by the repetition of the column. It is obvious that interest is not to be created by the crowding of heterogeneous elements. On the contrary, the secret inheres in great simplicity of arrangement of a repetitive theme.

The institutions of Imperial Rome were in time destined to yield to disintegrating forces. In the Christian era which was to alter the destiny of mankind both material and intellectual achievements were to survive in modified form. In architecture, east and west of Rome, the principle of the arch and of the column was to be continued and developed.

THE ART OF BYZANTIUM

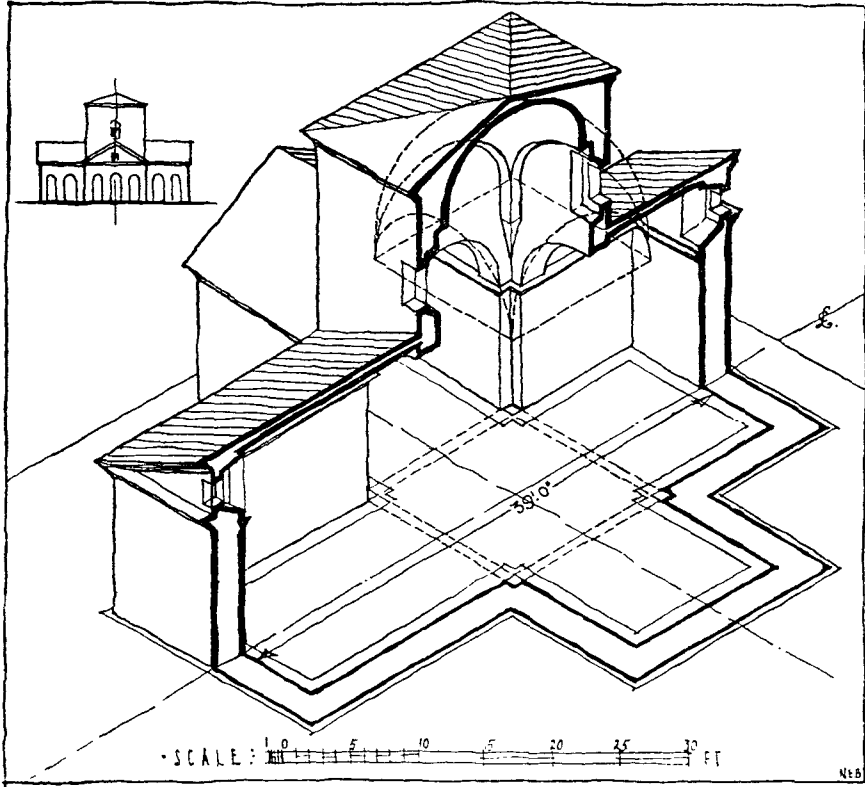
The gradual transition from ancient Rome to the new Byzantine Empire led to the continuance of Roman organization in a reformed manner. The new social and religious associations on the one hand, contact with the East on the other, evolved a departure in architecture and the arts which in the centuries to come percolated to Western Europe. It remains to show the nature of these changes and how they were brought about.

Although it may not always be possible to state with exactitude where one manner of building ends and another begins, it is at least reasonable to attach importance to those diversions which produce new methods of design and construction.

The Roman system of domical vaulting placed the dome over a circular plan, as in the case of the Pantheon. With the disappearance of internal colonnades, either as decoration or structural supports, various attempts were made both in the Italian peninsula and the Near East to roof non-circular buildings with a dome. Experiments of great daring were made, ranging in importance from the polygonal plans of Minerva Medica and Galla Placidia, A.D. 440, to the domical treatment of St. George's, Salonica, early fifth century. During the time in which these experiments were approximate, the Sassanian architects toyed with the squinch arch and the pendentive in order to correlate the circular form with the square. The great dome in the Palace of Serbistan, which dates from the fourth century A.D., affords evidence which cannot be disputed. Various other influences can be traced to Syria and Anatolia, and these in particular contributed

A SUMMARY OF ARCHITECTURAL COMPOSITION IN THE PAST

to Byzantine structural principles. The three great domes of the Palace of Feruzabad, which date from the fifth century A.D., were intended primarily to serve the purpose of domical vaults to be viewed from within. In the design of the brick-built Palace of Chosroes at Ctesiphon, dating



BYZANTINE

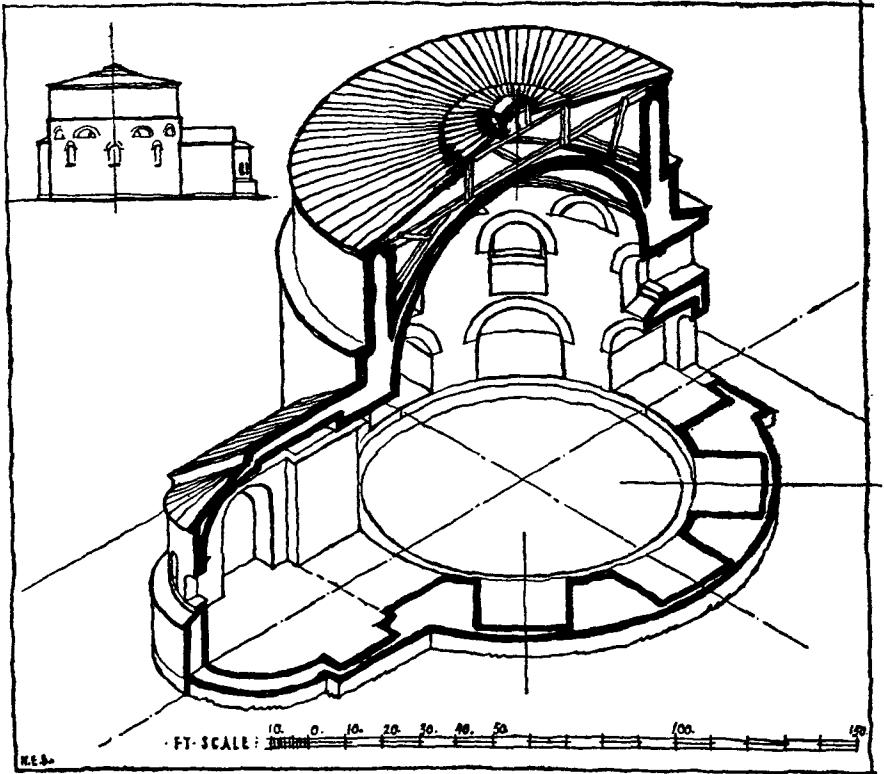
TOMB OF GALLA PLACIDIA, c. A.D. 440.

The Greek Cross Plan with Cupola on pendentives crowning the centre. The dome is not shown externally, but its position is indicated by its encasing tower. The origin of the central tower in Romanesque architecture has been attributed to this and similar precedents.

from the sixth century A.D., the ovoid arch is characteristic. The embodiment of these tentative experiments into a building of superlative excellence was left to the genius of Anthemios of Tralles and Isidoros of Miletus.

THE ART OF ARCHITECTURE

The construction of Santa Sophia, A.D. 537-563, required abutments of great mass to resist the thrust of the four arches and the dome. These abutments became part of the external expression which adds considerably to the dramatic character of the ensemble. Never was structural integrity more directly expressed than in the perfect poise, external and

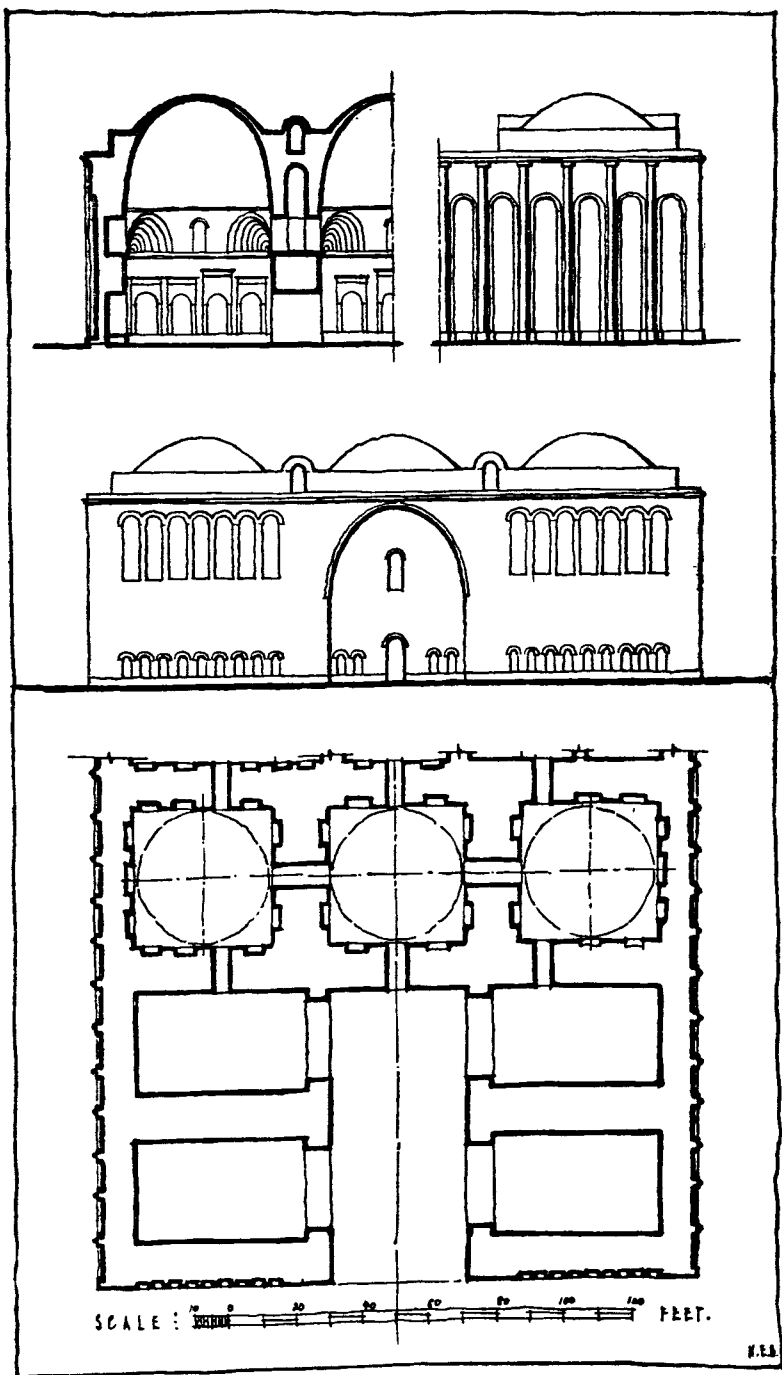


BYZANTINE

ST. GEORGE'S, SALONIKA

Straightforward dome expressing circular plan formation.

internal, of this supreme type of Byzantine design. The great church, although planned on a square, accentuated by a central dome, presents the effect of a dominant longitudinal axis. The introduction of semi-circular apses on the main axis to form abutments to the central dome provides a contrast to the superimposed arcades on the lateral walls. Thus is demonstrated the value of innovation combined with respect for



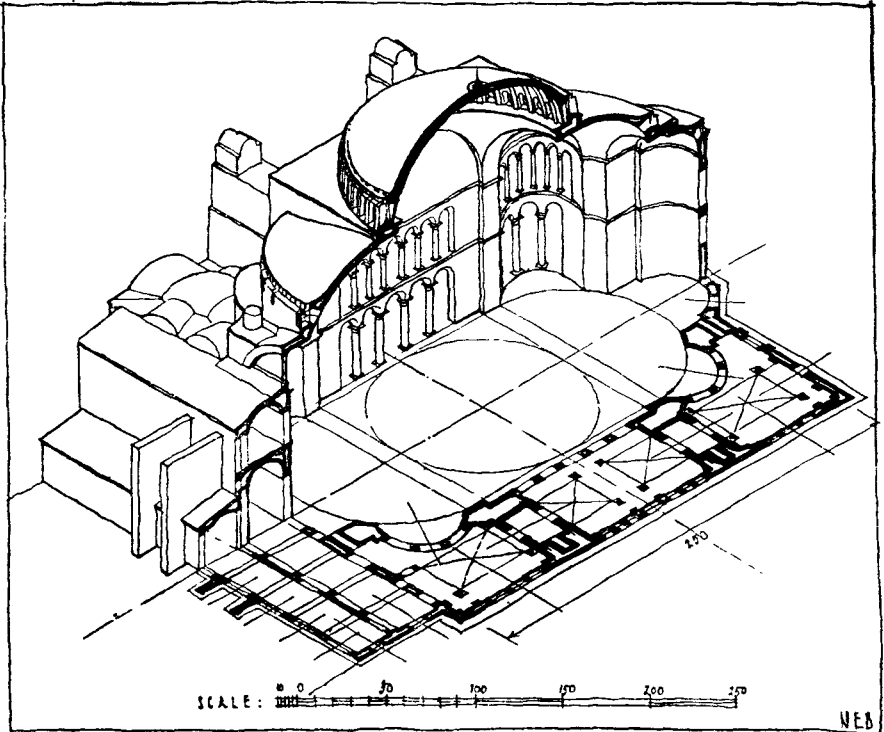
THE PALACE AT FERUZABAD

PLAN CONSISTING OF SIMILAR UNITS REPEATED IN GEOMETRICAL FORMATION

Domes expressed in elevation. Predominant central feature in contrast to smaller elements of the elevation imparts scale.

historical associations, the retention and modification of the basilican theme being clear.

The features of Byzantine architecture can be enumerated to include cupolas on pendentives, and the use of penetrating vaults; arcades and



BYZANTINE

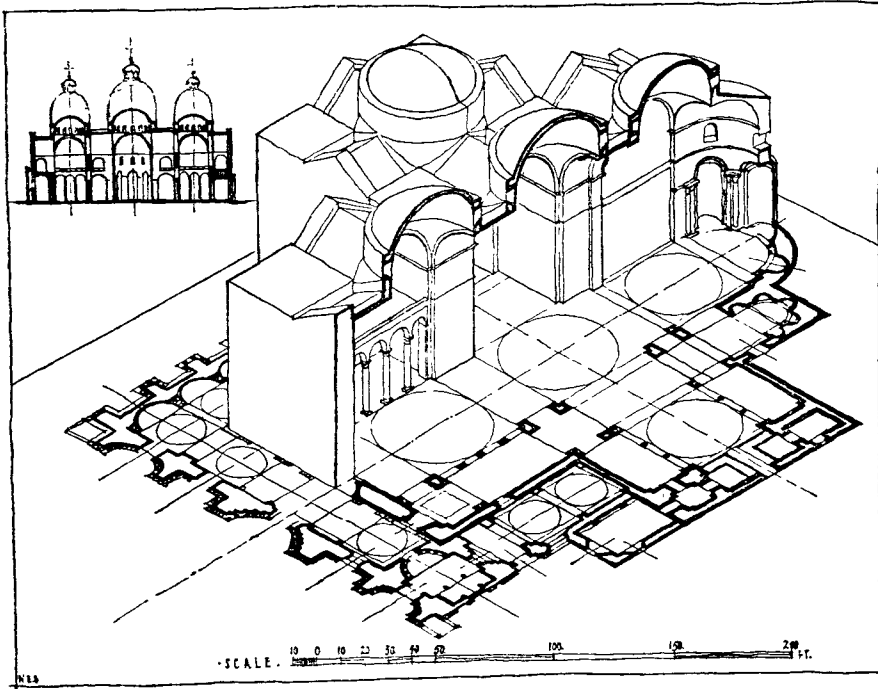
HAGIA SOPHIA, CONSTANTINOPLE

An example of an unobstructed rectangular space spanned by a great spheroid and supporting conchial spheroids.

columns with dossierets, richly carved capitals and bases, and inlays of mosaics and coloured marbles. Byzantine methods of construction, including the bonding of different materials in walling producing structural decoration, exercised due influence both in the Orient and the Occident. At Jerusalem Byzantine motives can be seen in the Golden Gateway and the Mosque of Omar. In the design of San Vitale at Ravenna, A.D. 541-550, can be seen features which were being in-

A SUMMARY OF ARCHITECTURAL COMPOSITION IN THE PAST

incorporated in the structure of Santa Sophia. Later on in the twelfth century, the Byzantine influence becomes more pronounced and is found in the cathedral at Monreale and in the cathedral at Torcello. But the building of St. Mark's, Venice, in the eleventh century provides even more striking evidence of the value attached to the works of Byzantine origin. In this case the Greek cross plan is definitely



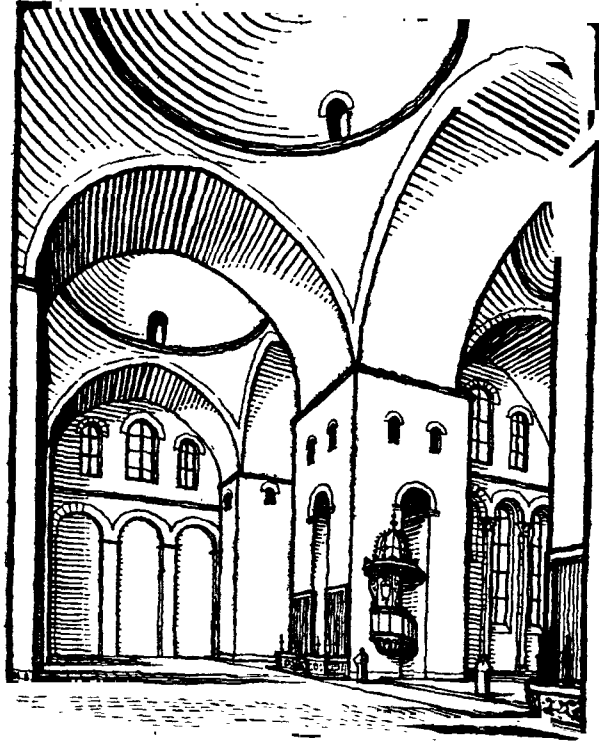
BYZANTINE
ST. MARK'S, VENICE

The introduction of three domes shows how the principle of Byzantine construction was adapted to suit the Latin type of plan.

marked by five domes forming the pattern of the cross. The symmetrical placing of these domes in regard to the central one for internal effect led to the expedient of secondary domes of timber for external purposes. In this can be seen a precedent for the Renaissance domes evolved for silhouette purposes. Mention must also be made of the ways by which the influences spread outwards from Constantinople. First must be considered the rivers and the overland

THE ART OF ARCHITECTURE

routes to Russia and Germany; the sea-routes to Italy and France, and the eastward routes by sea and land to Syria. The sub-influences brought by the Moors to Spain have nothing in common with the design of St. Front, Périgueux, which is an adaptation of St.



FRENCH ROMANESQUE

ST. FRONT, PÉRIGUEUX

An attempt to adapt the Byzantine cupola to the Latin plan.

Mark's, Venice. To sum up, the principal achievement of Byzantine architecture was the spanning of large voids while retaining unbroken internal perspective. In this is to be seen the dominant influence of the Greek Church, which could command the skill and energies of a devoted people.

Chapter 3

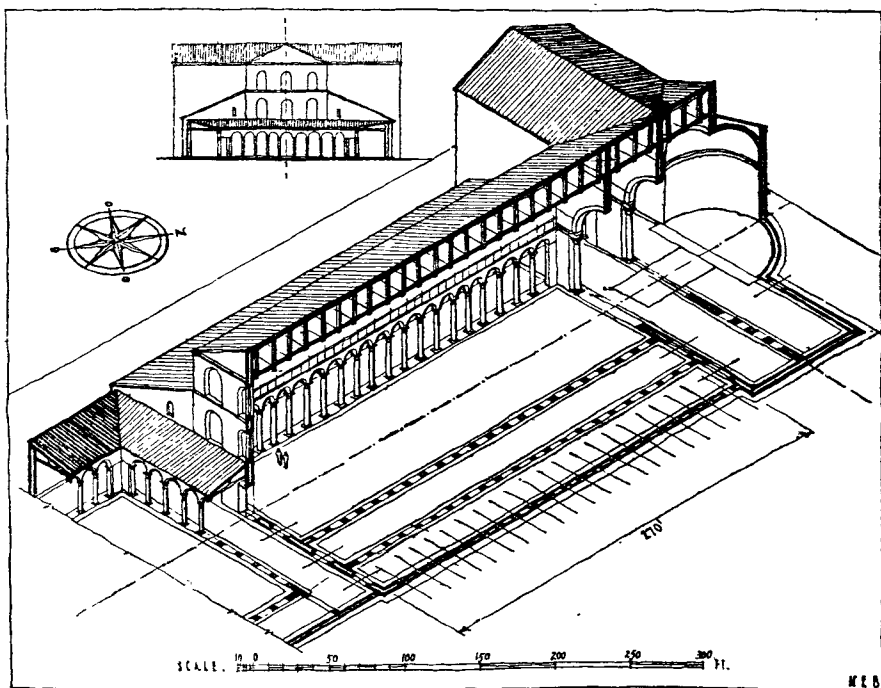
ROMANESQUE AND EARLY MEDIÆVAL

IT IS AN AXIOM that mankind consolidates first and then in more leisured times theorizes. In other words, history is the outcome of action followed by reflection and recording. Thought has perforce to be backward, for life is always in a state of perpetual change. In art the intellect has a twofold function. It has first to master and then to define those fundamental ideas that underlie the structure of plastic forms. Further, there is the necessity to bring basic truths to maturity and to correlate nebulous ideas to local conditions and customs influenced from totally different sources. In other words, each period in the history of art has produced its own philosophy. In the case of Romanesque architecture it was essential to revivify the principles of building, checked by the decline of Rome. It was not, however, until the thirteenth century that the full glory of Western architecture found expression in the great cathedrals of Europe.

The link between Classical architecture, the Romanesque and the Mediæval, is to be found in the transition from the prototype of the pagan basilica and *scholæ* to the developed plans of the early Basilican churches, of which Santa Maria Maggiore at Rome is typical. Another church, St. Paolo Fuori le Mura, begun in A.D. 386, repeats the principles of nave and double aisles, roofed in timber, and lit laterally by means of side and clerestory windows. The development of the chancel and the addition of transepts, as in the plan of St. Vincent, Alle Tre Fontane, built in A.D. 626, indicates the origin of the Latin cross plan. Even at this early date external pilasters make their appearance as light buttresses. The student is thus provided with a key to the elements of later Romanesque architecture and Gothic construction inherent in the earliest stages of a new departure in design. Here is further evidence

of continuity in architecture achieved by the adaptation of a known motif to a new purpose.

The transition from the pagan basilica to the Latin cross plan was effected by slight modifications and by the use of materials obtained from destroyed classic temples. The principle of the arch supported



EARLY CHRISTIAN ARCHITECTURE

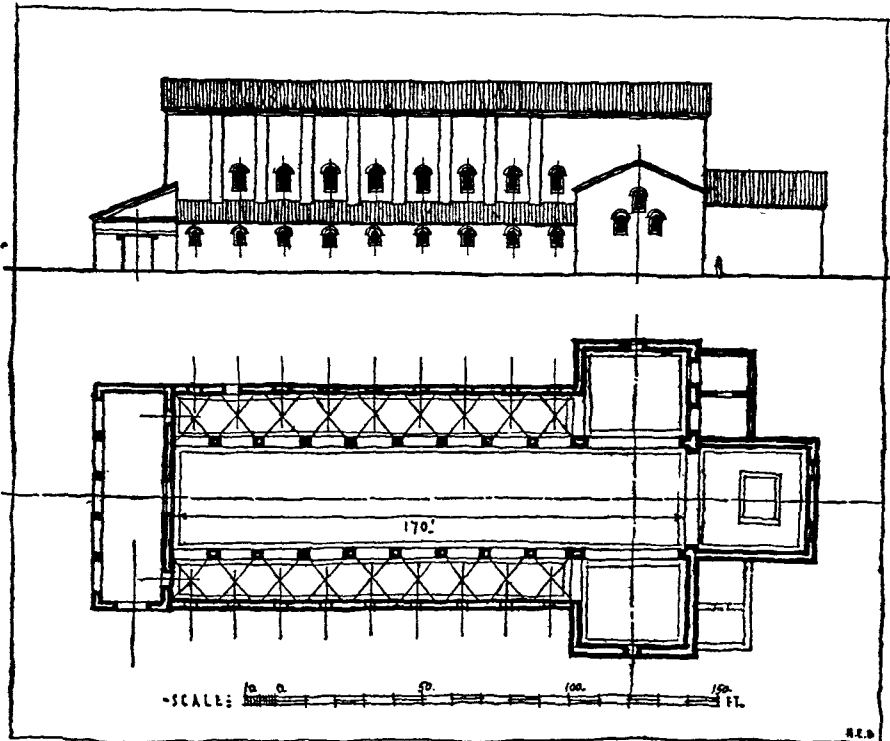
THE BASILICAN CHURCH OF S. PAOLO FUORI LE MURA, ROME, A.D. 380

Showing the Roman basilican plan adapted to the purpose of a Christian Church plan. The interior treatment consists of the repetition of a simple bay motive. The exterior expresses the cross section.

on a column was developed, while churches of the basilica type in the vicinity of Venice show naturally characteristic Byzantine details. It is interesting to find similar characteristics in the arrangement of the Coptic churches in Egypt and the churches of Syria. The development of Romanesque architecture in Italy to a point in which it reflected both Latin and Byzantine influences is to be seen in the design of the Cathedral at Torcello. In its absidal features the plan is Byzantine, but the main body

ROMANESQUE AND EARLY MEDIÆVAL

of the church still shows the characteristic division of central nave and collateral aisles of the basilica. The outstanding production of this phase of art in Italy is to be found in the Pisan group, consisting of the Baptistry, the Cathedral and the Campanile. The constructive principle underlying Romanesque architecture in Italy is that of small intervals and



EARLY ROMANESQUE ARCHITECTURE

CHURCH OF ST. VINCENT, ALLE TRE FONTANE, ROME

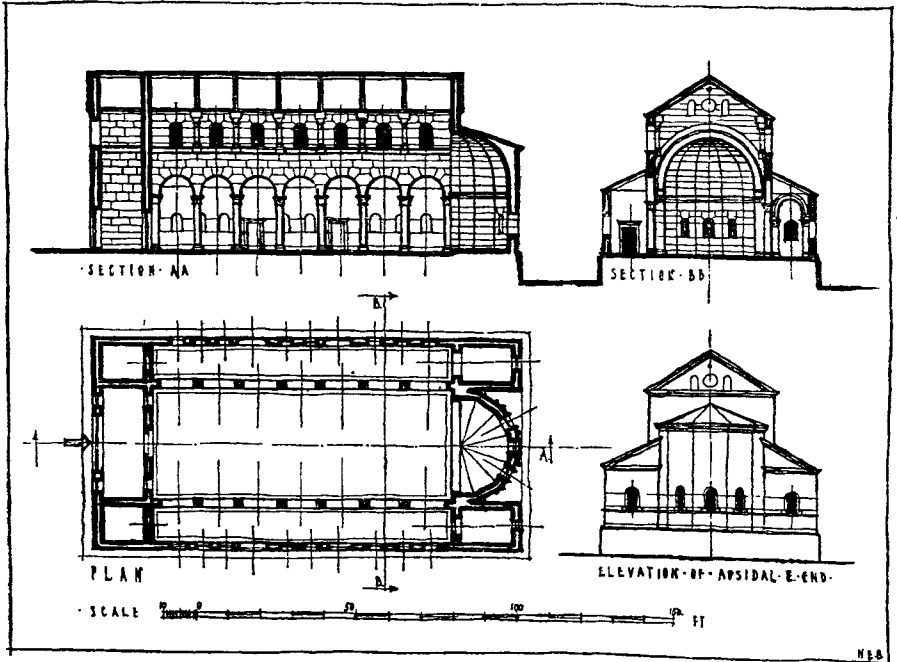
A prototype of the Gothic cruciform plan. An adaptation of the basilican type of plan retaining the front portico or narthex.

the formation of numerous subdivisions in elevational treatments; the retention of a coffered wooden ceiling for the main nave allows of façades which may be treated from the decorative point of view only.

The external expression of the cross section of these buildings obeys one of the first laws of architecture in that it reveals the form of roof covering the nave and aisles. The ingenuity of Buschetto the architect is shown

THE ART OF ARCHITECTURE

in the handling of the one architectural feature, namely, the arch and the column (then universal), and its repetition in tiered sequence. At a later period the full development of this theme is to be seen in the front of St. Trophime at Arles (A.D. 1152). The cathedral at Pisa embodies the Latin cross plan with deep transepts; over the crossing is a dome of octagonal form elongated in plan. This building is a landmark in



EARLY CHRISTIAN ARCHITECTURE

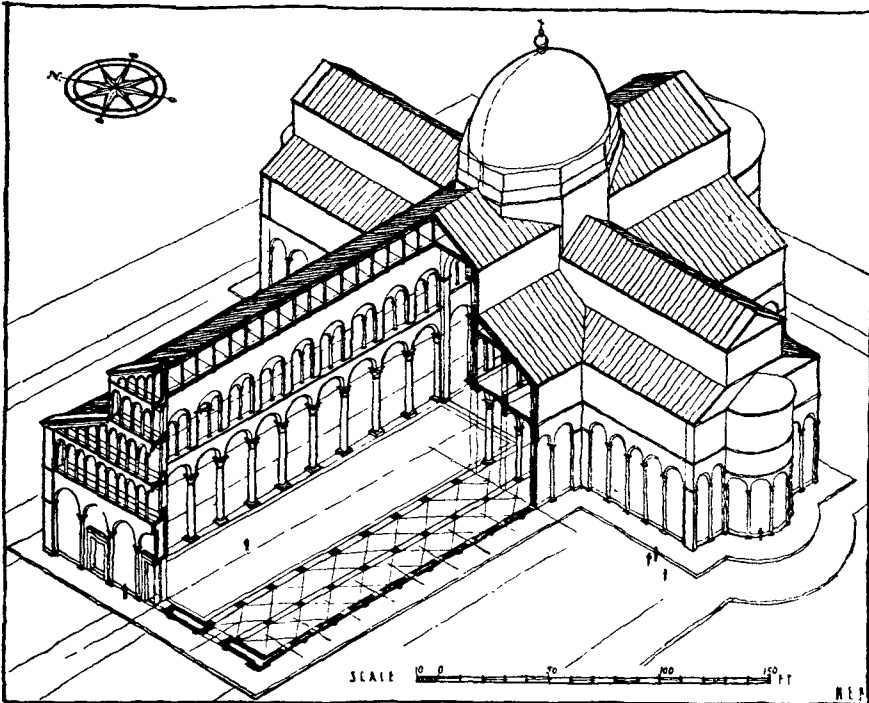
AN EARLY CHURCH IN SYRIA OF THE SIXTH CENTURY A.D. (RECONSTRUCTION)

This building explains the origins of many features of the Romanesque style, namely the colonnettes supporting the roof trusses, the clerestory lighting the apse at the western portico.

architectural design, for it contains all the elements which eventually became paramount in the design of later ecclesiastical buildings. The extensive employment of the round arch led quite naturally to the re-statement of vaulted compartments and to rhythmic spacing in planning. It was quite ordinary practice to make the side aisles half the width of the central nave. At the same time changes occurred in the form and disposition of piers and compounds. The isolated column had already

ROMANESQUE AND EARLY MEDIÆVAL

served its purpose as a main support and subdivision, and it had been developed into the single shaft of soaring height. The success attending the vaulting of small compartments, and the danger of fire to the outer spans of the central nave, led to the invention of the transverse arch and the semicircular cross arch. Quadripartite vaulting became a feature of



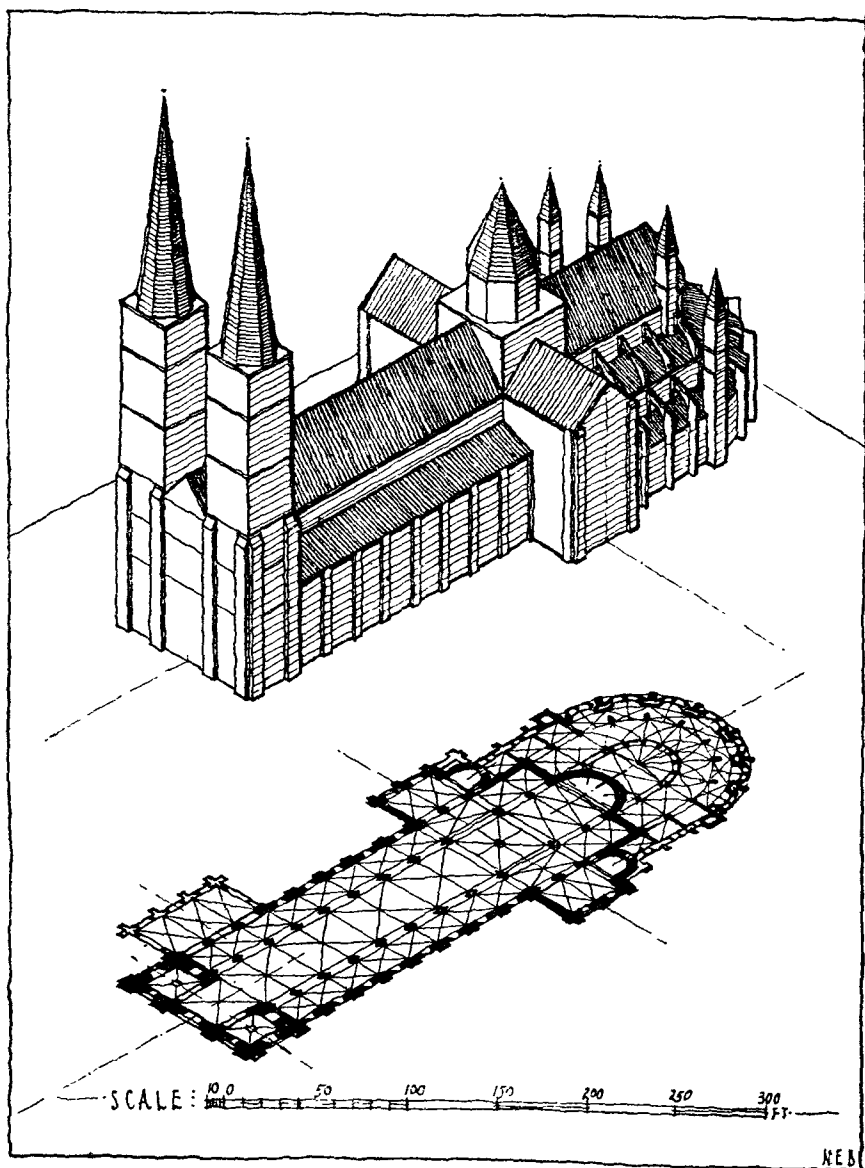
ROMANESQUE ARCHITECTURE: CENTRAL ITALIAN PERIOD

PISA CATHEDRAL

Latin cruciform plan based upon early Christian prototypes. The development of the triforium and the central domical feature crowning the junction of the transepts with the nave and chancel is the outcome of precedent. The west elevation expresses the cross section by means of tiered groups of wall units arranged horizontally.

early Romanesque design in France, Germany and England. This reinstatement of a principle of Roman construction was destined to become a salient principle of mediæval architecture.

The use of the vault necessitated a greater thickness for walls and even the introduction of flat buttresses. The development of the cupola, carried on squinches, was an importation from Byzantium. A summary

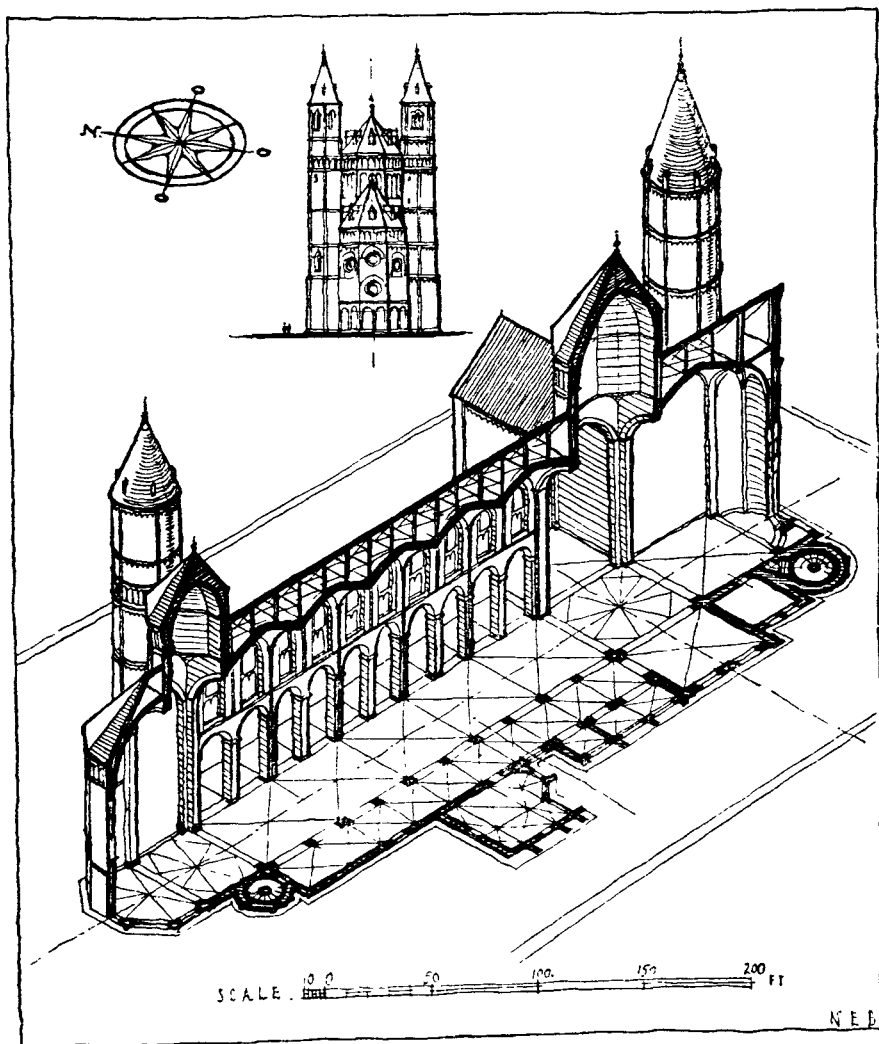


ROMANESQUE ARCHITECTURE IN EUROPE: FRANCE

THE ABBAYE-AUX-HOMMES, CAEN, A.D. 1066-1077

Latin cross type of plan with twelfth-century additions in the Gothic manner. The massed composition of the three towers forms the prototype of the French Gothic Cathedral of the thirteenth century.

ROMANESQUE AND EARLY MEDIEVAL



ROMANESQUE ARCHITECTURE IN EUROPE: GERMANY

WORMS CATHEDRAL, A.D. 1110-1200

The plan is derived from basilican and Syrian prototypes. The central tower recalls earlier examples, the additional towers east and west being innovations destined to develop into Gothic towers and spires at a later period.

of Romanesque church architecture can be made as follows. The plan was derived from the early Christian basilica, therefore it is related to

the Roman basilica. Cognizance, however, must be taken of the various alterations and additions such as the transept, the vaulted nave and the introduction of the ambulatory. The additions of chapels round the sanctuary, the building of towers either attached or isolated, and the gradual raising of the internal height, brought the Romanesque manner of building stage by stage towards structural poise. The characteristic plan types of Romanesque buildings in France, Germany and England include, (1) the Latin cross; (2) the radiating plan; (3) the absidal plan; (4) plans consisting of circles or combinations of circles. The development of the crypt below the chancel, often extending under the whole body of a church, the central and western towers, the triforium, the cloisters and other features, led to the perfection of architectural sequence in planning. At Autun, Vézelay, Poitiers, L'Abbaye-aux-Dames at Caen, Angoulême and St. Front, Périgueux, can be seen representative examples. In Germany: Worms Cathedral, with its eastern and western apses, Spire Cathedral and the Minster at Bonn. In England, the early Norman work of St. Albans, and the more matured naves at Ely, Peterborough and Durham, form part of the great architectural advance of the early mediæval period in Europe which owed so much to the rule of Charlemagne.

The great variety in types of church plans in all parts of Europe demonstrates the growth of architecture as a plastic art. Thus the influence of the domed structures of the East produced the circular or polygonal types. The West, on the other hand, contributed the basilican plan combined with the dome.

Amongst buildings of Romanesque character, the design of which led to the purely Gothic style, an outstanding example is St. Front, Périgueux. The Greek cross plan of this church follows that of St. Mark's, at Venice. The internal construction consists of a number of broad arches springing from immense piers of worked masonry which in themselves are compounds of four small piers connected by arches. From the pendentives in each cellular division of the plan spring the domes which externally take a conoidal form. This treatment, unique in the style, is similar to that of the church at Souillac, with the difference that in the latter example three domes are arranged on the line of the dominant axis.

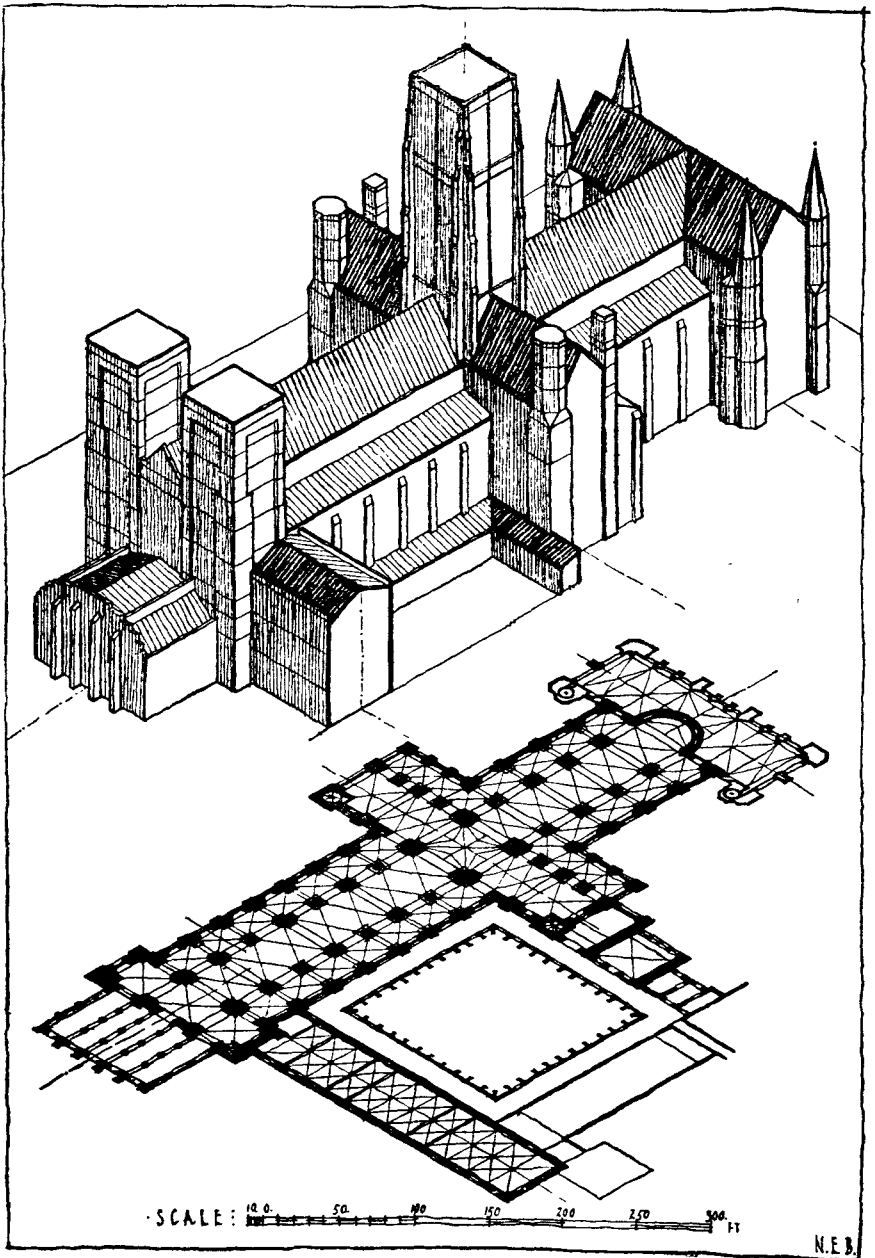
A further example, namely, St. Etienne, also at Périgueux, has a plan consisting of two rectangular blocks each of which is crowned by a dome, one being at a higher level. There exists the well-founded suspicion that

strong influences from Syria and Byzantium determined the form of these particular churches. That so many buildings of similar character are to be found in the same region is proof of the phenomenon of schools imitating established types of design. So far the examples chosen show the value of historical forms transposed from one country to another.

On the other hand, the plan of the Romanesque Cathedral at Autun, built in the latter part of the eleventh century, shows a nearer approach to the developed Gothic type of Latin cross plan. In point of fact, this building illustrates how the system of mediæval Gothic architecture was gradually evolved by similarity of treatment during the Romanesque period. In the early churches of the period heavy cross arches marked the divisions of a continuous wagon vault. At Autun flat strip pilasters rise directly from the pavement of the church to the springing of the vault. These are terminated by capitals from which the ribs rise in turn. Thus began the system of vaulting shafts, intended for stone vaulting, which later on became integral to Gothic architecture.

The transept at Peterborough, built in the early twelfth century, presents a similar analogy. At Worms Cathedral the vertical shaft combines with the wall ribs and the great cross springers above the capitals. The development of the abacus as the *tas de charge* for ribbed vaulting followed.

Large and small arcades, usually superimposed, are to be found in all internal and external treatments in Romanesque architecture. In France this is the case at St. Genou, Indre, built in the eleventh century. Also the interior of La Trinité, Caen, dating from the latter part of the eleventh century and of St. Germain des Prés, Paris, 1160. In this latter building the pointed Gothic arch and the vault made their simultaneous appearance. In the interior of Durham Cathedral, already mentioned, or at Gloucester, Tewkesbury Abbey and Southwell Cathedral, similar themes are to be seen. In Spain, the vast cathedrals of Salamanca, Leon, Toro and Santiago, illustrate the universal adoption of the principle of contrasting arcades. It was, however, in the development and variety of pier formations that the Romanesque builders showed their great ingenuity. It is to be noted that the early types of pier compounds were later adopted and modified, especially in the thirteenth and fourteenth centuries. At Rochester Cathedral, for example, the piers of the nave assume a variety of shapes to accommodate the rims of the arches to the capitals of each pier.



MEDIAEVAL GOTHIC: ENGLAND
DURHAM CATHEDRAL

An example of cruciform planning admitting of vertical emphasis at the crossing of the nave and transepts, also at the west end. All elements of the plan are expressed in the elevations. The central tower is typical of the English method of treating the central crossing.

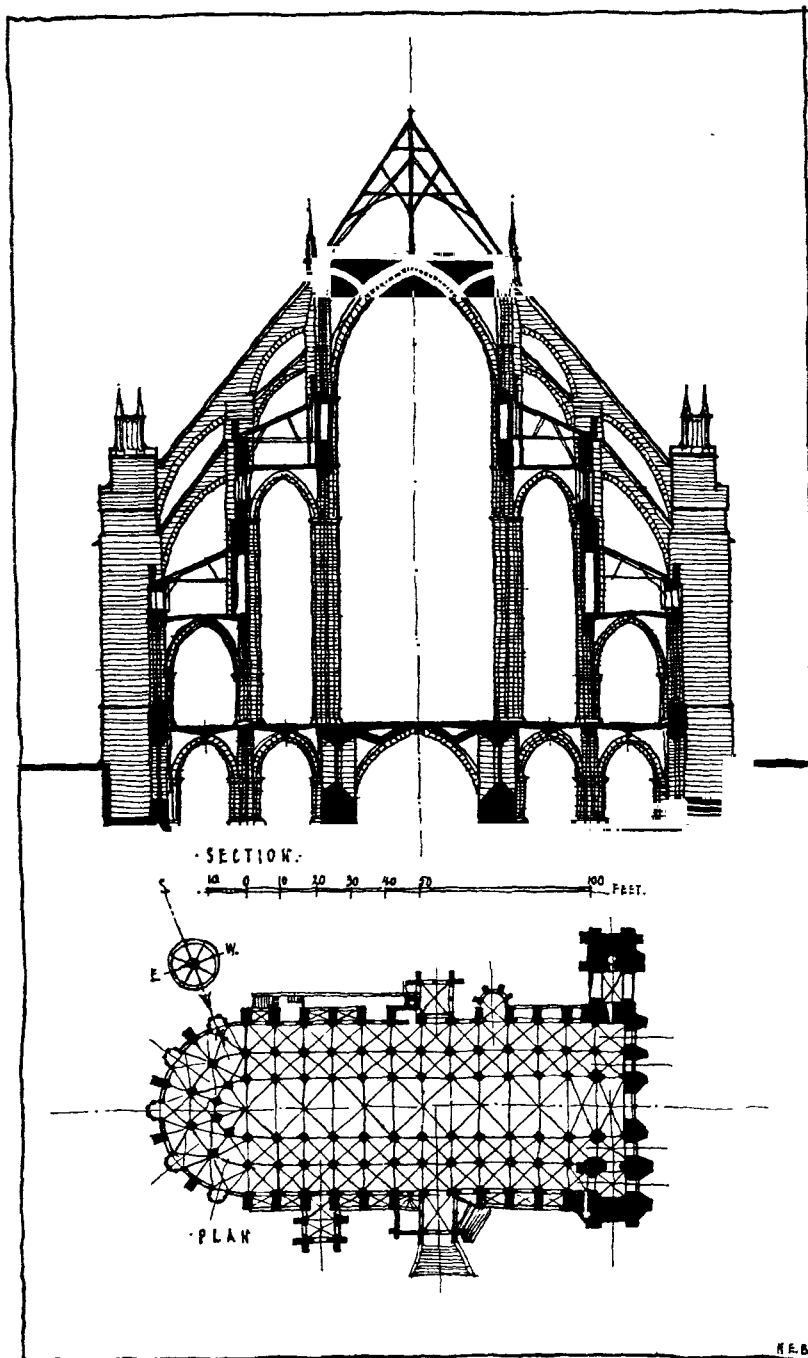
The transition from Romanesque architecture to that of later mediæval times is accounted to be one of the most instructive epochs in the story of the art. There is never any break in architecture, but simply continuation of theme. Romanesque architecture is essentially an arcuated style relying on stone construction for its most telling internal effects. It is in the treatment of noble arcades that the style is revealed at its best. Nothing illustrates the vitality of Romanesque architecture better than the scale upon which the Norman cathedrals were projected during the eleventh and twelfth centuries. The subsequent advances in structural devisement during the thirteenth and fourteenth centuries were in no small measure made possible by the splendid achievements of the earlier builders.

MEDIAEVAL ARCHITECTURE

From the time of the barbaric invasions upon the Old Empire of Rome in the fifth century to the partial stabilization of Christianity under Charlemagne the influences that reinstated the arts of Western Europe came from the church and the monastery. The gradual evolution of the conscious manner of building known as Romanesque has already been described. The arts and the sciences, preserved so miraculously in the darkness that preceded the suppression of paganism, were inherited by a civilization endowed with energy. In the process of time, schools and universities were founded under the direction of the clergy and religious bodies. There ensued a general revival of scholastic zeal; architecture, sculpture, poetry, astronomy, mathematics, in fact all the liberal arts, were encouraged. Finally, printing was invented and the way was prepared for further changes.

Western civilization in the early mediæval period owed much to the Latin traditions, which the schools of Marseilles, Autun, Narbonne, Lyons, Bordeaux and Toulouse afforded as a basis for intellectual regeneration. The founding of the University of Paris, with its charters and privileges, encouraged scholars from all nations to study at this cosmopolitan university. By the middle of the thirteenth century the French centre of learning had reached full development. The good results in the fortunes of the art of building achieved by the Church were now to attain to greater brilliance.

The reason is not far to seek. Mediæval scholarship had imposed new ideals, and it was only natural that the conditions, both material and



GOTHIC: FRANCE

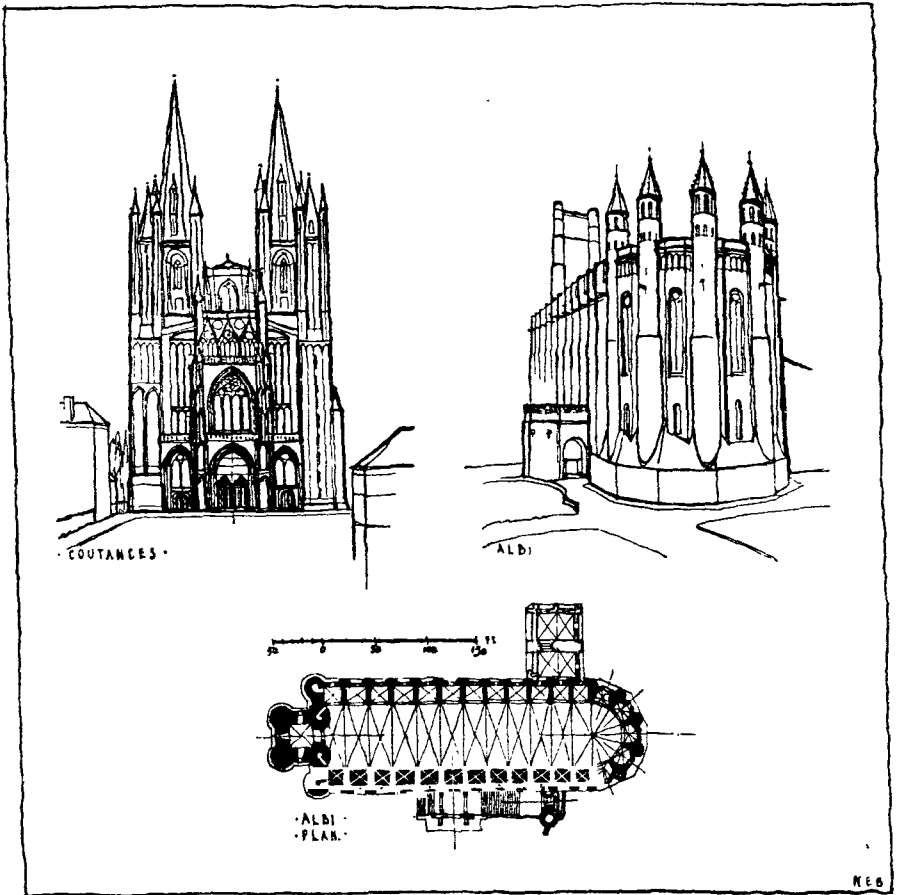
BOURGES CATHEDRAL

An example of nave and double aisle planning without transepts. An attempt to gain impressive internal volume and at the same time the maximum height possible, the aisles becoming essential counterforts.

intellectual, then prevailing in France should at that time have given special emphasis to local architecture. Although the principle of independent expression in other countries and districts has to be recognized in this connection, we have perforce to acknowledge the neighbourhood of Paris to be, if not the cradle of Gothic originality in plastic form, at least its focus and point of departure from the Romanesque, as may be seen at St. Denis.

It is commonly supposed that Europe's debt to French Gothic lies in the imitation of certain derived forms such as cylindrical columns with large square capitals, the use of slender shafts, and the example of beautiful carvings and sculptured decoration. These improvements, manifest as they are in the nave of Notre Dame, do not of themselves convey to the eye the basic principles which are generic to Gothic architecture, and, moreover, which accompanied it from its inception to its decline. To describe the whole process of achievement during the thirteenth and fourteenth centuries, in a manner at all commensurate with the vast scope of the subject, would require a separate work dealing with the historical aspect alone. It will suffice to say, that the long struggle to adopt the round arch to needs of a more elastic nature ended in the structural innovation of the pointed arch. The new problem, therefore, the mediæval architect had to face was to reduce thrust, to build in compartments, to raise architectural features in tiers of masonry and to give point and expression to geometrical projects.

The adoption of the Roman principle of vaulting, which is the root, proved to be a difficult matter in countries where brick arches with concrete infillings were not usual. When stone, jointed and dressed, was employed, it was found to be difficult in the extreme to set the arch. Expediency suggested the raising of the level of the key stone, and thus a compromise was effected between the principle of the Roman vault and the cupola; the theory, therefore, in this and similar cases, being to reduce the thrust of cylindrical or conoidal sections. The ogival arch, or the arch composed of two segments, was known and practised from the earliest antiquity. But although in Egyptian and Greek architecture it appears with horizontal jointing in the form of sequential corbelling, in Persia and Egypt the Greek schools of the Alexandrians or Nestorians, with their systems of triangulations in design, made use of the ogival arch with the jointing perpendicular to the curve, thereby ensuring great stability. In Italy this principle



GOthic: FRANCE

1. COUTANCES

Verticality of central volume expressed in elevation and emphasized by supporting towers.

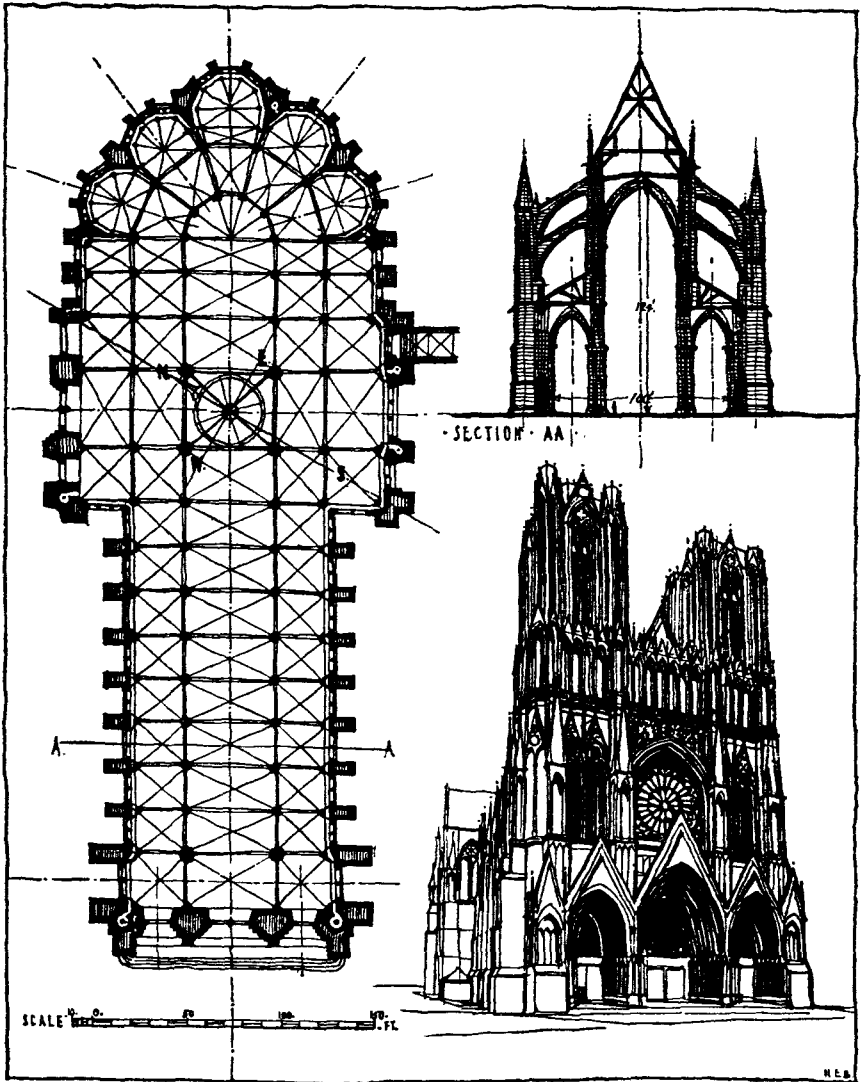
2. ALBI CATHEDRAL

An example of fortified church architecture with plan of the single unit type.

of construction was misinterpreted and the jointing was conveyed towards a common centre: the architects of Northern Europe, through contact with the East, following the early Crusades, foresaw the possibilities of such a novel construction and developed it as a new principle. The genius of the Middle Ages was to consolidate theories and

to give encouragement to new ideas. We have, therefore, to acknowledge the adroit skill of the monks of Cluny who, in constant touch with the Monastery of St. Gall and the East, and conversant with the art of building, were the first to adopt and apply the ogival arch to vaulted constructions, the notable examples being Poissy and St. Martin des Champs. The difficulty of vaulting elongated rectangular plans contrariwise to the Roman or Byzantine methods of conforming the vaulting system to squared plans was solved by the application of the broken arch to the principle of cupola building. This analysis of the methods of construction in the late eleventh century provides the clue to the beginnings of Gothic architecture, the porch of the abbatial church at Vézelay being the outstanding example of the application of a new structural principle. But the impulse given to religious instruction after the founding of the corporations and the erection of huge religious edifices, built at successive periods, forced the mediæval architect not only to extend the use of the cupola system of construction, but to develop it and, using it as a new point of departure, to invent a new construction for vaults where the diagonal ribs and generating broken arches become members in a comprehensive structural webbing supporting pockets of lighter material. In a word, the whole of the vault, contained in one compartment, became the embodiment of architectural plasticity. Wilars de Honecort gives interesting data concerning the tracing of these self-same ogival arches, but the difficulty of setting out full-size rods for large spans restricted the Gothic architect's scope to the use of three main segmental arches. First, the ogival arch formed as an equilateral triangle; secondly, the broken arch struck from two centres; and thirdly, the arch formed over a triangle the base of which is divided into five parts, the segment in each case being described from the end of the fourth part.

The emergence of the great principle of Gothic construction, however, is to be found not in the use of the pointed arch but in the development of the vaulting system where ribs of independent formation combine to support panelled surfaces of sympathetic curvature. This innovation in building methods, which had already made its appearance in various countries, was now brought one stage nearer to perfection. Of the exact origin of the articulated vault of Gothic type it is not possible to make a definite statement. In Lombardy there is the well-known example, St. Flavien at Montefiascone, which probably dates from



GOTHIC: FRANCE

RHEIMS CATHEDRAL

Cruciform plan with chevet at the east end. West front shows variation of French treatment, i.e. twin towers and expression of central nave in elevation.

A.D. 1032. In France, we have St. Denis and Vézelay, while in England there is the magnificent vaulted nave of Durham.

All things considered, it is not the origin of the principle of Gothic design that matters, but its application to structures requiring both imaginative handling and the highest technical skill. The mastery of "thrusts" at localized points of support resulted in walls where voids are predominant. This led eventually to the introduction of large windows, and to modifications in the treatment of interiors. We trace the development of the piers from massive cylinders to the elegantly clustered compounds which support the vaulting ribs. Construction became lighter in effect as the science of stereotomy became more accomplished. By the middle of the thirteenth century two definite treatments of vault, combining rib and shaft, had become established both in France and in England. In the former country, the square abacus received the trace of the simple cross-vaulting ribs. In England, the abacus was circular and the vaulting ribs were richly moulded. Herein is to be discerned the point of divergence which led to the wonderful and peculiarly English construction of *lierne* vaulting and later the complicated fan vaulting of the fifteenth century. With regard to the design of Gothic buildings, it is now clear that the mediæval architect was recruited from the constantly increasing group of skilled masons, and that he worked in consultation with the ecclesiastical authorities associated with each great edifice, the term "Magister" applying equally to the trained builder or to the chief mason.

Modern investigation indicates the empirical and lineal framework which decided the main lines of plans and elevations. From exact documents, as well as from graffiti,¹ can be deduced the truth that designs were not only studied pictorially, but were the result of the influence of buildings already in being. The proof of the value of traditional continuity is to be seen in the highly original plastic forms of the Middle Ages. The Gothic principle of poised equilibrium admitted of a malleability denied to classic art. There was scope for rhythm ignoring absolute symmetry, recognition of irregularity and delicate silhouette. The complexity of the distribution of the various components of a Gothic structure was not only the outcome of geometrical rules based on squares and triangles, but the setting out was often determined by mathematicians who studied buildings already in existence. There is the renowned case of the investigations of the mathematician, Storna-

¹ As at Ashwell, Herts; Leighton Buzzard, Bedfordshire; and in St. Albans Cathedral.

locho of Piacenza, in connection with the cathedral of Milan. Whatever the basis of the rules followed by individual master masons, it is clear that the architecture of Western Europe during the thirteenth, fourteenth and fifteenth centuries acknowledged principles which were common. Yet despite the acceptance and use of these formulæ each country interpreted the spirit of Gothic art in terms of national character.

There can be no doubt of the fact that mediæval Christendom was productive of unity in corporate organization and by a process of penetration became a great intellectual force among the peoples of Western and Northern Europe. How this was brought about is aptly ascribed to the rise of three great monastic orders, namely, the Cistercians, the Franciscans and the Dominicans. Religious fervour paved the way to an exuberant manifestation of fantastic idealism expressed in the richness of portals, the delicacy of tracery, the soaring majesty of nave interiors and the domination of towers and spires. The desire of the Church to instruct and to impress led to the development of carving and painting as well as to the rise of the grotesque and the fabulous which made a particular appeal to the untutored mediæval mind.

Towards the end of the thirteenth century, when French Gothic was finally established as a living manner of building, when the vaulting system was attaining perfection, and when the immediate necessity for grandiose foundations had been met, those groups of foreign masons and artificers who had found employment in France returned to their respective countries. Herein is to be seen a further explanation of the spread of Gothic art outside France. One thing is paramount, the thirteenth century witnessed the rise of French Gothic as a national art and encouraged the artistic genius of those who worked on the cathedrals of Amiens, Notre Dame, Rheims, Chartres and Beauvais.

It is essential for the purpose of this study to appreciate the formation of the French cathedral of the Middle Ages, which stood near the centre of a city and reflected the life that ebbed and flowed in its vicinity. The cathedral at Amiens, the work of Robert de Luzarches, may be regarded as typical of the mediæval system. The normal plan of a Gothic cathedral can be traced to the plan of a basilica, which was divided into three aisles, the centre one being wider. Very often the central nave expands and resolves the lateral aisles into chapels. The plan of Amiens Cathedral is related to the basilican type with the difference that the

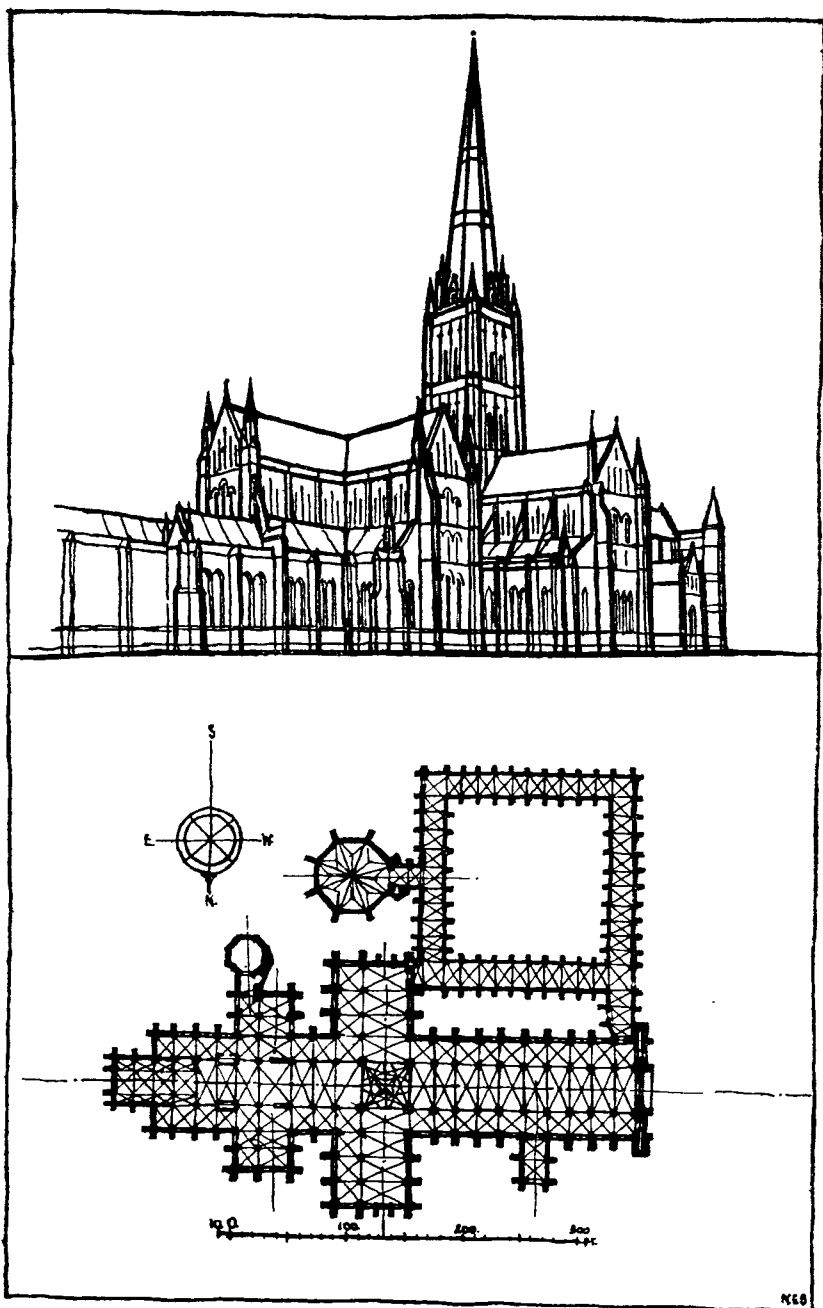
choir is increased in importance by the addition of an ambulatory aisle and a ring of chapels, the latter constituting a chevet. Reference to the elevations of Amiens, Beauvais and St. Maclou will show the forcing of vertical masses from the plan for effect.

In the whole of Europe, with the exception of England, the plans of cathedrals and large churches follow the apsidal treatment of the basilican types. There are, however, two examples in England to prove the rule, namely, Canterbury and Westminster, both of which show direct influence from France.

The introduction of transepts belongs to the development of the Latin cross plan and created the demand for a central tower or *flèche*. The great variety in pictorial and elevational composition which is the chief characteristic of mediæval architecture was the outcome not only of structural requirements, but of an intuition for monumental attainment. There can be no doubt that the ultimate external form of a cathedral was present in the mind of the projector from the moment the major dimensions of the plan were formulated. The drawings for the aisles and clerestory of Rheims Cathedral from the sketch-book of Wilars de Honecourt indicate the scope of the mediæval architect. It was the predetermination of plastic form that led to continual adventure in Gothic building.

There yet remains to explain the systematic arrangement of the western fronts of the mediæval cathedrals which, rightly speaking, are to be regarded as screens to the nave and aisles. These rich designs are often contradictions of the internal section, consisting as they do of tiered compartments, framed between towers, and only related to the nave and aisles by the treatment of the main and subsidiary portals. Based on Lombardian and Romanesque examples, the western façades of the Gothic cathedrals became frontispieces, upon which the designer lavished his skill. Here was a field for fantastic devisement, for dramatic contrast between horizontal and vertical components. Then the great west window became the focal point.

The main difference between the French and the English cathedral is not one of scale, but of placing. In England the cathedral either formed part of a monastery or was served by secular canons. It stood in the midst of a spacious close with subsidiary buildings forming an architectural setting. The close at Salisbury, the precincts at Ely and Wells, are typically English and illustrate the more domestic character of their



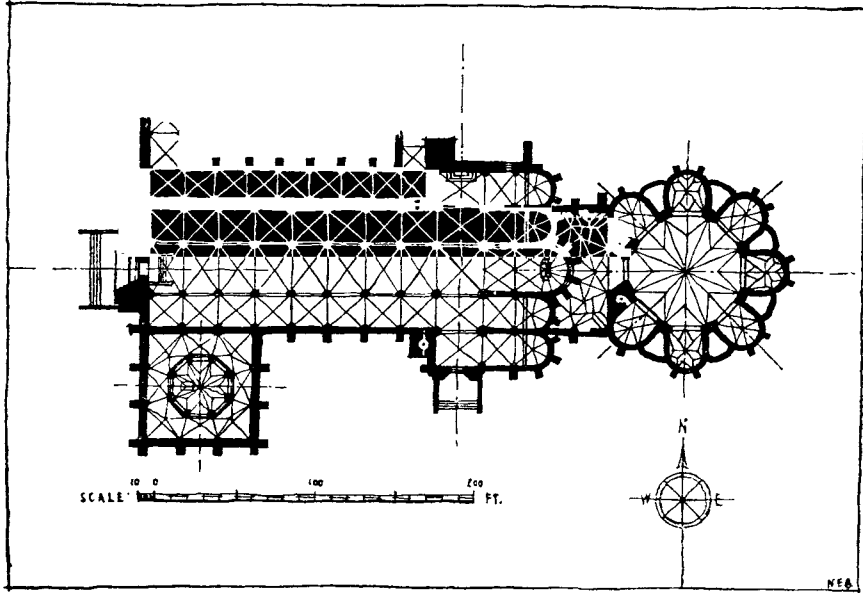
GOTHIC: ENGLAND

SALISBURY CATHEDRAL

An enlargement of the cruciform plan with additional transepts east of the crossing emphasizing the importance of the choir and sanctuary.

MEDIÆVAL

arrangement. The presence of a transept is a common feature in English plans down to the middle of the thirteenth century. Salisbury Cathedral, dating from 1220, presents the cross-plan cathedral with Saxon traditions still surviving. In this case the forced eastward extension of the choir for greater accommodation called for an additional transept. There was also the need for additional altars. It is not un-



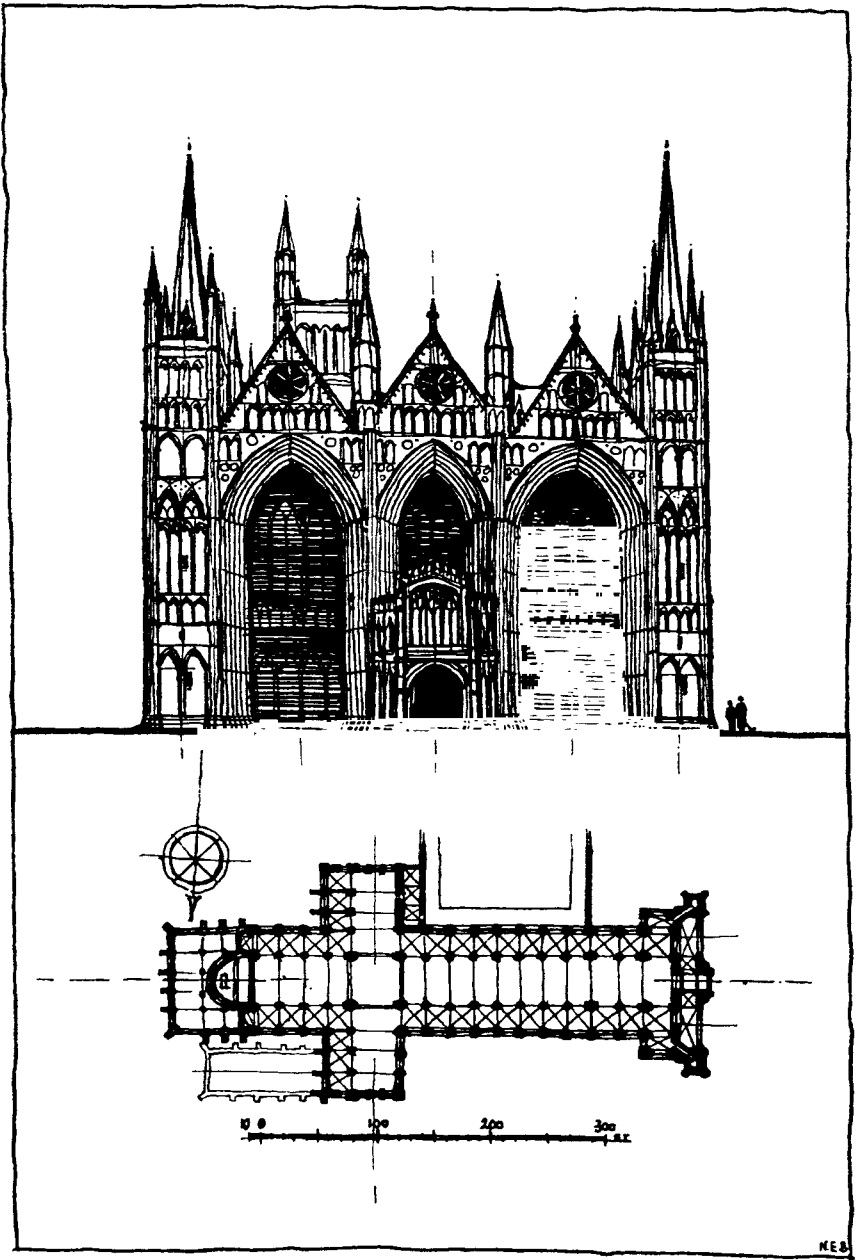
GOTHIC: PORTUGAL

BATALHA CATHEDRAL

An example of a three-part plan, i.e. nave and aisles, the unfinished octagon at the east end being a later addition.

common in England to find one of the aisles taken for a chapel or forming a separate building, as in the case of the Lady Chapel at Ely.

A comparison of the plans of the principal early English cathedrals shows the strong impress of Saxon and Norman tradition. That is to say, the plans of Latin cross formation with square east ends. The introduction of polygonal forms in planning was reserved for chapter houses and sacristies, such features being extraneous to the cathedral, but frequently planned in relation to the cloisters. At Ely the octagonal lantern built in the early fourteenth century to replace the Norman tower



GOthic: ENGLAND

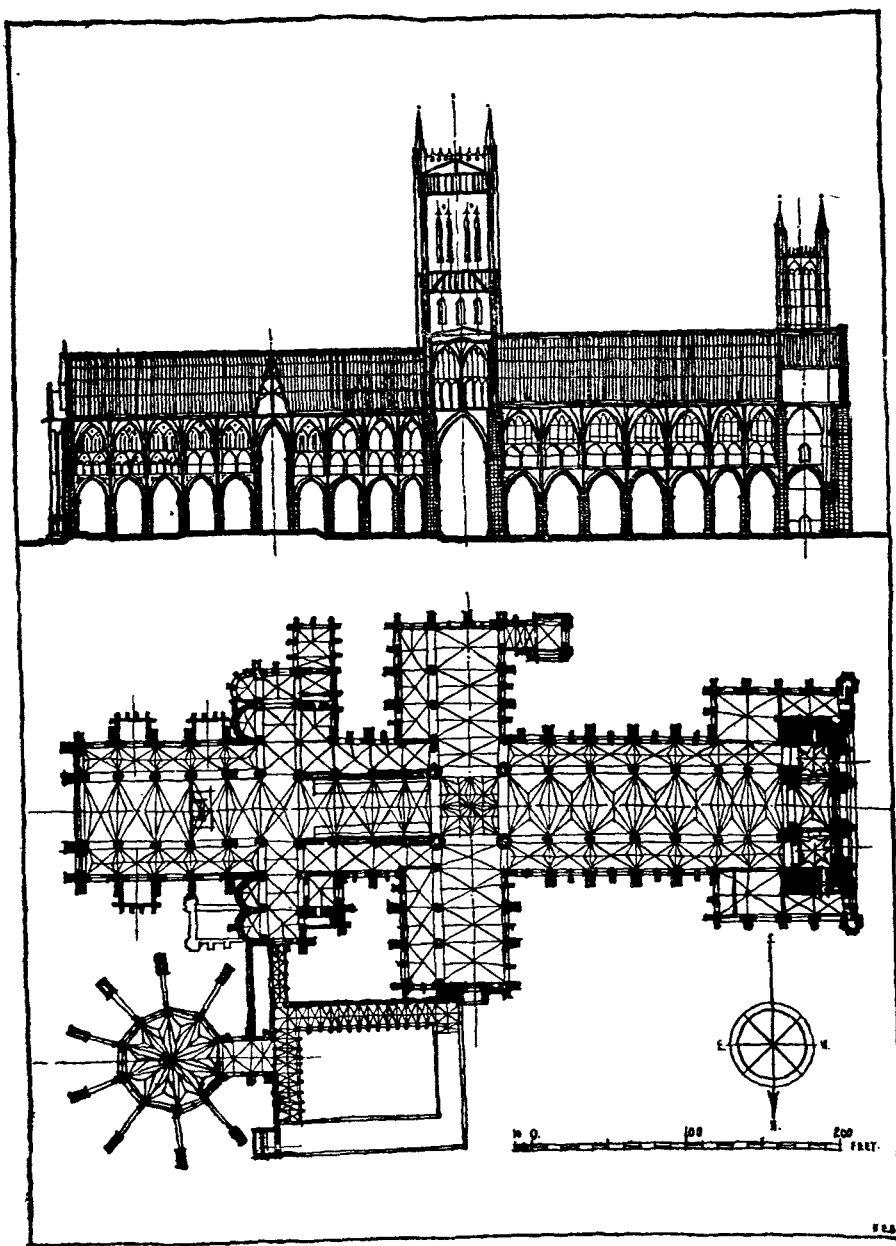
PETERBOROUGH CATHEDRAL, WEST FRONT

An example of a screen elevation designed to broaden the west front of an earlier Norman structure.

at the crossing of nave and transepts introduced one of the finest motifs in English Gothic architecture. There is, however, the example of the octagonal lantern over the crossing at Coutances in France. It is interesting to find that the incomplete octagon at Batalha in Portugal, and the octagonal treatment of the central tower at Burgos in Spain, belong to a later period. To the English mediæval designer falls the honour for the earliest adaptation of polygonal features on a great scale. It is significant that the external treatment of the chevet at Westminster contains the germ of the idea afterwards carried to such perfection in the lantern at Ely, where the octagon begins at the level of the pavement of the original choir.

Many reasons have been adduced to explain the national character of English Gothic architecture in the late fourteenth and fifteenth centuries. In the first place, the style known to-day as Decorated had already shown signs of change when French art declined during the time of the Pontifical schism, but English architecture was still susceptible to foreign innovations. The results of the Hundred Years' War were to be baneful to art in France and not entirely favourable to art in England. During the French campaigns England procured many material advantages, but when the final evacuation took place, after it was realized that national expansion in French territory was impossible, the intensive national feeling of the English assumed a deeper significance. It is not strange, therefore, that the inventive genius of an insular people when thrown back on their own resources should have been equal to a departure in architectural style for which no parallel exists. There is the further reason for the individual character which Perpendicular buildings assumed. This can be traced to the decline of the influence of ecclesiastical direction and the rise of a powerful merchant and yeomen class. The frequency of plagues, particularly the Black Death, not only retarded the building of churches and additions to cathedrals, but suspended for a time the active life of the community. The eventual recovery of the nation coincided with a renewed building activity which found its expression in new treatments of vaulting, arches and large windows.

While the window opening was extended to the utmost width and height, transomes were introduced and tracery assumed structural patternings. The verticality of mullions, the branching of innumerable ribs from extremely slender compounds into vaults, the panelling of wall surfaces, internal and external, and the increased height of towers are



GOTHIC ARCHITECTURE

LINCOLN CATHEDRAL, EARLY ENGLISH

As at Salisbury, the double transept admits of additional chapels, all facing east. This system should be compared with the French chevet.

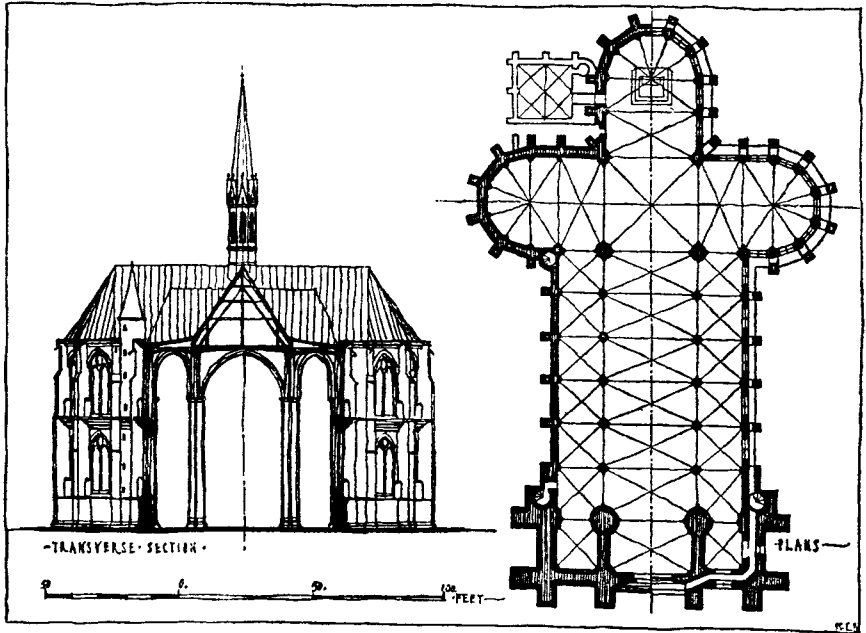
among the features of the third development of Gothic architecture which has received the designation Perpendicular, and flourished for two centuries. With the invention of fan vaulting, as a sequel to the lierne system, there ensued a perfection of the geometrical system of setting out. This, in turn, led to the suppression of the rib as a structural member owing to the multiplicity and reduced dimensions of vault panels. In process of time the great vaulting systems of King's College Chapel, Cambridge, and the chapels at Windsor and Westminster were evolved. The main transverse ribs were now concealed; in fact, a subconscious return had been made to classical methods of vaulting. Further, the development of flat-pitched roofs for small churches in the fourteenth century, due to the introduction of clerestory windows, also played an important part in determining the flat vaulting of Henry the Seventh's reign. While it can be conceded that Perpendicular architecture maintains the sequential tradition of Gothic, it demonstrates the significant fact of design controlling construction. Once again the basic principle of predetermined plastic forms can be seen.

Gothic architecture was by no means confined to France or England, and it is interesting to see how its principles were modified in Northern and Southern Europe and Italy.

In Northern Germany the use of brick resulted in an aspect of its own, while the suppression of the triforium by the raising of the height of the aisles, in some cases to the height of the nave, created the "Hall Church." The Church of St. Elizabeth, Marburg, and the Frauenkirche at Nuremberg are typical. In the Low Countries the plans of cathedrals follow French examples; at Antwerp the profusion of aisles, seven in number, reveals the tendency to increase the congregational aspect of cathedrals. The plan of St. Eustache, Paris, can also be mentioned in this regard. The great towers, such as those at Antwerp, Malines, and Utrecht, are peculiar to the mediæval art of the Netherlands. In the examples mentioned the great height was intentional and especially suited to the flat country. It was the boast of the burghers of Middelburg that they could view the towers of Antwerp from the top of Lang Jan. The influence of French Gothic can also be seen in the magnificent brick-built cathedral at Upsala and in the cathedrals of Northern Spain, namely, Burgos, Leon and Salamanca. The largest Gothic cathedral in Europe, at Seville, is said to have been built by masons from Germany. This structure has the unusual treatment of a square east end. The central

nave is accompanied by double aisles and chapels on each side. The scale of the building is stupendous, while the absence of a steep-pitched roof imparts an Eastern character to the silhouette of the structure as a whole when viewed from a distance.

A feature common to all Spanish churches, the Coro, occupies the central nave; the position usually given to the Presbytery in English churches being allocated to the Capilla Mayor.



GOTHIC: GERMAN

ST. ELIZABETH, MARBURG

The hall type of church. Aisles of equal height to the nave crossing marked with a *flèche*.

There remains to be noted the Gothic architecture of Italy, of which the cathedrals of Milan and Siena are so representative. In the case of Milan, the cruciform plan, the nave with double aisles and the transepts, and the treatment of the Sanctuary recalls the Flanders type of cathedral plan. The great height of the nave, almost equalling the fragment at Beauvais, the slender character of the compounds, with their ornamental canopies, and externally the multiplicity of pinnacles, belong to the

Italian spirit of concession to the art of the Tedeschi. It is known that many Germans were employed on the construction of Milan Cathedral. As was the case at Seville, the vaulting is covered by a roof of flat pitch formed of marble slabs. Italy, however, cannot be credited with response to Gothic art in spite of the experiments in brickwork, as at Pisa, or the magnificent façade of the Doge's Palace at Venice, with its strong suggestion of Eastern influence.

The secular architecture of the Middle Ages reflects intimate social life in town and country, ranging as it does from domestic buildings to courts of justice, town halls, colleges, palaces and castles. To these must be added the important religious establishments such as abbeys, convents and monasteries, as well as houses of charity and hospitals. Mediæval planning can be summarized as the grouping of apartments according to their nature. In the design of castles the main objective was defence; this meant the allocation of quarters according to rank. A ring of outerworks surrounded the keep or donjon. Points of entry were guarded by portcullis and drawbridge, and on all sides precautions were taken to obviate surprise attack. Under such conditions private life and comfort were subordinated to the accommodation of an armed garrison and the storage of arms and provisions. From the castle developed the French *Manoir*, and in England the Hall; in both cases the moat was retained together with architectural features reminiscent of military architecture. Plans were arranged to include private chapels, and main rooms were segregated from the kitchen and servants' quarters. Both in France and England rooms were grouped round one or more courts, there were few internal corridors and the numerous staircases which served as vertical circulations were of restricted dimensions and continued the earlier fortress types.

A town house of importance, such as the famous mansion of Jacques Cœur at Bourges, was planned on similar lines, the composition being adapted to the site. Axial and symmetrical planning is conspicuous by its absence, while corridors are almost unknown. The small town houses occupied by the professional people, traders, merchants and master craftsmen, were built on narrow sites. The ground-floor space was given to a shop. There was a side passage and stairway giving access to the apartments above, the latter sometimes occupying four floors which projected over the footway. At the back, on the ground-floor level, ranged about a small court, was the kitchen, the well and the store.

This type of plan was common to all European cities and towns and its principles have survived to this day. This form of planning on narrow and restricted sites brought wide fenestration into being to correct the deficiency in natural lighting. In England the development of timber construction under the auspices of the Carpenters' Company, and similar guilds, not only systematized methods of contract and work to schedule, but standardized the scantlings and arrangements of timber according to locality. The majority of features associated with timber construction have been perpetuated in stone and brick in the form of string courses, corbels and brackets. This is particularly true of the Renaissance in France.

In the façades of timber-built houses of the later Middle Ages is to be seen the predominance of the horizontal as opposed to the vertical line. There is also the evidence of fine judgment in the elevational treatment which ordered the arrangement of the timbers, on the ground prior to their erection *in situ*. In the thirteenth century the use of the long timber in a vertical direction decreed that house fronts should be flat. With the adoption of the vertical short piece and the reservation of the long timber as a plate or sole piece, the carpenter saw the possibility of increasing the area of each successive floor until the gable face projected some four or five feet over the footway.

The phenomenal development of English domestic architecture which took place after the Wars of the Roses expressed the new prosperity of Tudor times and gave fresh colour to the generous advancement of squire and yeoman. In the wool stapling districts of East Anglia and the Cotswolds is to be seen tangible evidence of the period which followed the decline of feudalism. The English manor house, the farms and the cottages built in the reigns of Henry the seventh and eighth, show the domestic peace and security to which this country had attained for the first time since the Roman occupation.

When confronted with problems of civic importance the mediæval builder showed great ingenuity. The existence of corporations and guilds encouraged the erection of municipal palaces for the common good. The increasing size of city populations, the new complexity of civic organization, the need of accommodation for banquets and receptions, halls for deliberations, magazines for arms, and a depot for men-at-arms, as well as prisons, called for buildings of special design. Some undercrofts were used as markets or taverns. Among the most marvellous creations of the Middle Ages was the belfry with its carillon

and the warning tocsin. The great belfry of Bruges, for example, not only dominates the Grand Place, but stands sentinel over the walls and boundaries of the city's possessions, a visible symbol of civic life and authority. In such examples as the Hôtel de Ville at Arras or at St. Quentin, the Cloth Hall at Ypres, and buildings of similar type in other towns of France and the Low Countries, the verticality of the tower contrasts with the horizontality of the elevations produced by the rhythmic grouping of apertures and the giant arcuations of the ground storey with its pillared supports. In this manner was created those variations of designs which are both purposeful and pictorial. At Middelburg, Holland, the great tower rises from behind the principal elevation of the town hall, and this is also the case at Veere, nearby. By association it is permissible to relate such works to the masterly façade of the Doge's Palace, Venice, the triumph of Pietro Lombardo, in the late fourteenth century. There is also a close affinity between the mediæval town hall and buildings such as the Mercanzia at Bologna.

This brief summary of Gothic architecture attempts to illustrate the freedom and vivacity of the art. The differences in the development from everything that preceded or succeeded it must strike every student. At all periods the ablest designers and craftsmen concentrated their energies on expression of structure. In the main it was the outcome of religious fervour which visualized pictorial effects, often independent of structural requirements. Gothic art was ever searching for innovations until time brought the inevitable reaction.

In any survey of mediæval art priority is due to France and England. In both countries, during three centuries, the art of architecture as then developed can be seen at its best. Here, too, are exemplified, in works of permanent value as national monuments, principles established and followed by a great succession of mediæval builders.

The structure of any of the French cathedrals which developed from the great churches of the Romanesque period directs attention to the observance of first principles of geometry and proportion.

The plan of Notre Dame is selected as being typical of changes in arrangement as well as foreshadowing developments which followed in other buildings at a much later period. The nave is unusually wide and is supported by double aisles; the transepts are comparatively short. Chapels were formed later between the deeply recessed buttresses. The chancel which rounds off the plan is not only the earliest in France but

intentionally continues the symmetrical arrangement of the plan. What is indeed remarkable, considering the perfection of the detail, is that the whole of the work was completed early in the thirteenth century. The western front, added slightly later, has a severe character pertaining more to the Romanesque from whence it is derived than to the freer expression of Gothic. Of one thing the student can be certain, and that is that this building provided the model for other and later churches in France.

The western front has three deeply recessed doorways marking externally the position of the central nave and double aisles, the analogy in this case to the narthex of the destroyed Abbey Church of Cluny being convincing. But the glory of the west front is the wheel window, forty-two feet in diameter, balanced by coupled windows. The impressive scale of the sombre twin towers, one slightly narrower than the other, linked by the open arcaded screen above the wheel window, is enhanced by the horizontal sculptured band of statues of the Kings of France. From between the towers of the west front the delicate *flèche* forms a point of interest. If the western aspect of Notre Dame is monumental and sombre, the view of the ensemble from the south-east, with the elegant flying buttresses and the intricacy of gables, pinnacles and contrasting towers, forms an entrancing silhouette. From the development of structural principles and predetermined arrangement of plan in the formation of Gothic architecture, can be deduced the principle of æsthetic contrast as applied to the treatment of the exteriors of the later cathedrals. The west front of Rheims, inspired beyond doubt by the treatment of Notre Dame, consists of a frontispiece which masks the nave and aisles. Here the Gothic theme has changed from the quasi-classical character of the front of Notre Dame and has become soaring and exuberant. It is, however, the plan that should be noticed as representative of the change in internal arrangement. As regards its purpose as the Coronation church of France, and for the development of ritual, changes became necessary. The eastern half of the plan was broadened and became an extension of the nave with double aisles including the transepts. The apsidal eastern end was developed as a chevet of five chapels.¹ Both the plans of Chartres and of Amiens exhibit the same generous treatment in the eastern portion. As the subject is investigated it becomes clear that the French mediæval architects, realizing the

¹ It is said that the design of this cathedral inspired the plan of Westminster Abbey.

importance of the plan as a pattern, strove to differentiate between the foot, namely, the western narthex, and the head of the plan, the chevet. That the effect of an internal climax was understood is not only characteristic of the practice of the time, but demonstrates the profound skill of the designers and the extent to which they had profited by a study of precedent.

Externally the treatment of Amiens Cathedral, built by Robert de Luzarches in the second half of the thirteenth century, is something much more advanced. The west front, for example, departs both from the treatment of Notre Dame, Paris, and of the Cathedral of Rheims. The western towers of Amiens are smaller by comparison with those of the two latter cathedrals, and unequal in dimensions and height. Here is demonstrated the principle of asymmetrical balance. The general view of the cathedral from the south-west stresses the importance of the transept and the flèche. From the south-east the chevet and the flying buttresses combine with the flèche to form a pyramidal grouping, the western towers being lost to view.

The choir and transepts of Beauvais, the most adventurous work of the Middle Ages, represent the limits of structural skill of the time. The great height of the interior, rising as it does to 157 feet 6 inches from the pavement, was attained by a system of iron tie rods and a permanent stone scaffolding of flying buttresses in three tiers. The plan of the chevet consists of seven chapels, the external divisions of which are articulated vertically and carried back to the wall of the choir by the flying buttresses. Thus the vault thrust is met at the proper points and counteracted. The structural weakness which exists between the vertical buttresses is met by the presence of horizontal tie rods. No other building in France expresses architectural daring in quite the same way.

Among the lesser buildings erected during the thirteenth century La Sainte Chapelle, Paris, is typical of the perfection then sought and attained. The design contains all the attributes of a great cathedral in miniature. The western front has twin tourelles, a rose window and a two-storeyed portal. The nave is expressed laterally by buttresses with windows finished with gables, the pyramidal grouping and oneness of the ensemble being accentuated by the flèche in the centre of the pitched roof. La Sainte Chapelle has a richly vaulted crypt, an apsidal east end and a high stone vaulted roof. Both internally and externally this gem

of French mediæval architecture is an epitome of the perfection of Gothic on a diminutive scale.

The remaining Gothic cathedrals of the thirteenth century include Strasbourg with its splendid western front and openwork spire; Rouen with its three towers, Coutances, noted for the two western towers and spires and the octagonal lantern over the crossing of nave and transepts, and the fortress Cathedral Church at Albi.

In this example the nave, which is nearly sixty feet in width, gives the impression of a lofty vaulted hall. The apsidal eastern end is expressed externally by five tourelles of circular form which contrast with the semi-octagonal intermediate forms of the wall and windows between them. The chapels which surround the east end are formed between the internal buttresses.

The Gothic architecture of France covers three hundred and fifty years. It has been divided into three groups: (*a*) *Primaire* or *Gothique à Lancettes*; (*b*) *Secondaire* or *Rayonnant*; (*c*) *Tertiaire* or *Flamboyant*. The unique character of the style expressed in the building of cathedrals and churches focuses attention not only upon the extraordinary skill of the mediæval builders, but also explains the existence of great designers, who followed acknowledged systems of building.

An understanding of the evolution by gradual stages of the principles which converted the Roman basilica into the great church of the Romanesque period and in slow time evolved the perfected Gothic cathedral is essential. The development of a cellular system, controlled by geometry, made it possible for piers and vaults to soar even higher. Statues and ornament became more delicate and more apposite; glass and decoration more colourful. The theory of repetitive unity contrasted by bold variations led in time to that dignity and grandeur of conception which is the glory of French Gothic architecture. To understand the intricacy and interest of French mediæval life implies study of the national monuments and the towns in which they stand.

So far the object of this section has been to enquire into the principles which underlie Gothic architecture and to stress the importance of the contribution made by France from A.D. 1150 to 1500.

For various reasons the contemporary development of the art in England, although to some extent parallel with that followed in France, assumed a different character. This difference consists chiefly of changes in the treatment of vaulting, buttresses, mouldings and ornament.

That this was due to the insularity of the English, despite intercourse with France and the employment of foreign masons and architects, is well known. But, as was the case in France, the Romanesque style eventually gave place to the purely Gothic and led to great variety in the planning and grouping of English cathedrals and churches. There is another difference, and that is the smaller scale of the English buildings. A proper understanding of Gothic architecture in both countries will explain the differences that exist between the two expressions, at once so similar in principle and so different in handling and detail. As in France, English Gothic divides into three sections: (a) Early English developed from the Norman or Romanesque; (b) Decorated, a more voluptuous version of the early geometrical style; (c) Perpendicular, in which extreme verticality is contrasted with the horizontality of arches and vaulting.

As already mentioned, the vaulting of the nave of Durham Cathedral marks the point of departure from the Romanesque to the Gothic. In this we have the earliest example of the principle of the pointed arch applied to the building of a high vault over a wide space. The limit of unit design, that is to say the width of a bay, had been demonstrated as early as 1077 at St. Albans, and the principle of repetition of the unit had been extended to the naves of Durham, Canterbury, Ely, Peterborough, Southwell, Winchester and Gloucester. The proportions of the bay unit were now to be changed in such a manner that the resulting lightness of construction became a source of wonder. This was due to the universal adoption of the pointed arch, which not only increased the dimensions of the clerestory windows, but made possible the vaulting of irregular as well as regular compartments. Cathedrals not only became lighter in point of construction, but admitted of wider glazing between the compound piers. One of the finest examples of the change that was followed is evidenced in the treatment of the triforium at Westminster and the choir of Lincoln Cathedral (1255, 1280).

Another point of divergence between French and English Gothic is found in the rectangular type of plan common to most English cathedrals, with the exception of Westminster Abbey, which was inspired by the plan of Rheims.

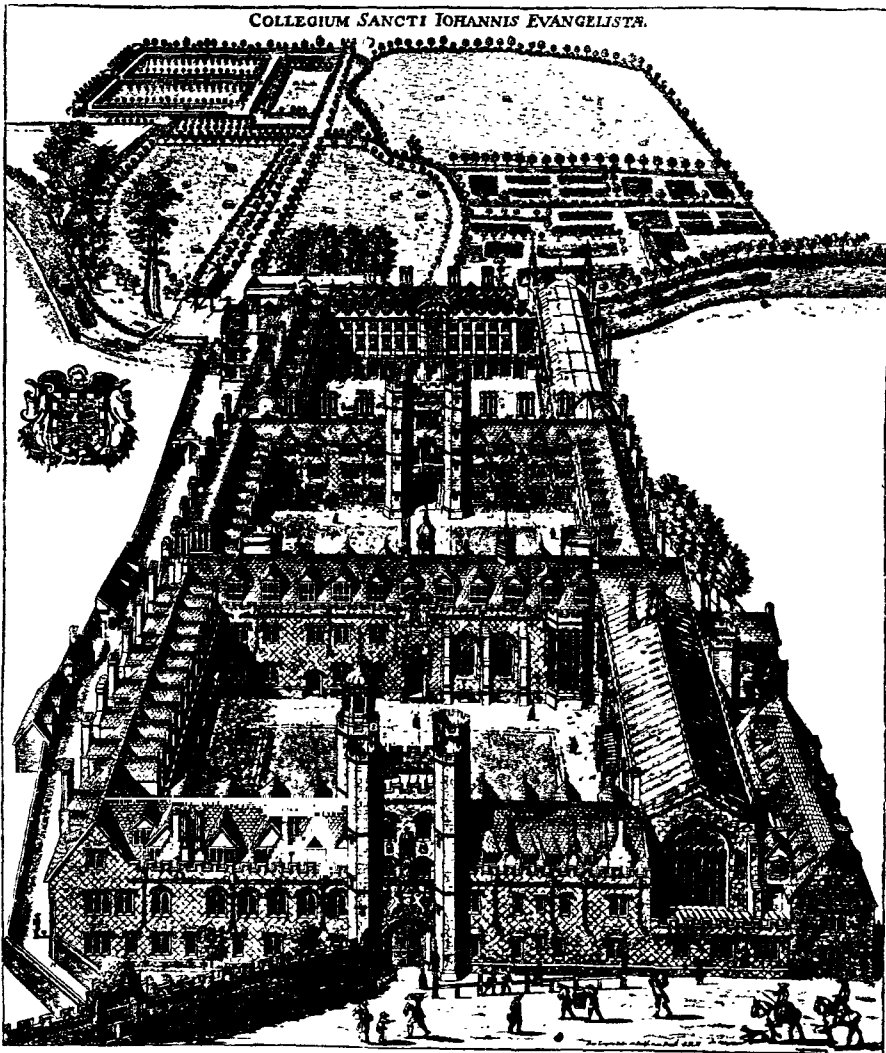
The plan of Salisbury, built almost entirely in the thirteenth century, is long and narrow. The east end is square. The main transepts intersecting the crossing provide four points of support for a central tower, the chief feature of English cathedrals. The double transept previously

mentioned was designed for additional altars and chapels. Here at Salisbury is to be seen a treatment entirely different from that of the French chevet, but one not devoid of an interest of its own. The principle of the double transept can also be seen at Canterbury and at Lincoln. Another difference in point of purity of style exists in the fact that whereas French cathedrals are genuinely of one date with slight variations, English cathedrals, on the other hand, are the product of centuries and exhibit changes of style which by happy expedient are made to harmonize very pleasantly. Salisbury, however, is the exception, although even in this case the external pyramidal grouping is due to the fine early fourteenth-century spire. The striking contrast that is to be found between French and English planning is due in the latter case to English cathedrals being situated in the seclusion of a close and forming part of a group of monastic buildings. Not only were the cloisters planned to be used as working places for the monks, but they were designed as architectural attributes to enhance the external massing of the cathedral as at Salisbury and Wells. With the exception of Old St. Paul's Cathedral, London, the English cathedral was not the centre of civic life.

In England the mediæval architects and the ecclesiastical authorities determined on great length for internal vistas. The height of the vault was kept comparatively low, Westminster Abbey being the exception. In the latter case the vault is one hundred feet above the pavement and the interior more nearly approaches French examples. The nature of English services and ritual did not call for the same number of chapels and subsidiary altars as was the case on the Continent. In England the transepts of cathedrals project considerably. The chief characteristic, however, is the central tower, which begins with the magnificent Norman example at St. Albans and is seen in the full glory of development at York, Lincoln, Canterbury and Wells. Salisbury, Norwich, Lichfield and Chichester provide the novelty of central towers crowned with spires. The wooden spire of Old St. Paul's rose to a height of five hundred and twenty feet above the pavement.

The development of the unit or bay system in the design of cathedrals and parish churches led naturally to perfection of window treatment. Thus, the introduction of arcading for the triforium at Westminster in the thirteenth century, and the elaborate double tracery for the clerestory of the angel choir, Lincoln, show the efforts made to perfect the sequential treatment of interiors, both horizontally and vertically. The

MEDIÆVAL



ST. JOHN'S COLLEGE, CAMBRIDGE

principle of contrast between horizontal and vertical subdivisions was also emphasized by the difference of proportion between nave, arcade, triforium and clerestory. By comparison with French cathedrals of similar character, the English examples are smaller, but in the majority of cases are no less graceful and complete. It is in the beauty of the tracery, the contour of the mouldings and the interest of the carving, no less than in the character of the fitments, that English Gothic excels.

Among the characteristics of Early English Gothic, A.D. 1189-1307, are the narrow lancet windows, the projecting buttresses, finished with pinnacles, and the steeply pitched roofs over nave and aisles, as at the Temple Church, London. The simplicity of masonry and outline, the delicacy of the ornament, the panelled vaulting with diagonal ribs are also outstanding features. At Salisbury, Lincoln, Westminster and Wells, the Early English style can be seen at its best; such splendid fragments as the nave of West Walton Church, Norfolk, and the western bays of Elstow Church, Bedfordshire, are among the most perfect minor examples. The Decorated period, A.D. 1307-1377, represents a natural development of the earlier manner with a more voluptuous handling of detail and ornament. Geometrical and curvilinear tracery with a preference for ogival forms distinguishes the design of windows. The gradual increase in scale of the clerestory and the subordination of the triforium led naturally to improvement in the development of more intricate and decorative stella vaulting. These developments can best be seen at Exeter and Bristol cathedrals. It is generally acknowledged that the finest expressions of the Decorated style exist in the Lady Chapel at Ely, and the west front of York Minster. At this period, 1310-1370, arcades were enriched with canopies of ogival form, windows were increased in width and scope was given for stained glass. In the third division, the Perpendicular period, A.D. 1377-1550, vertical lines are predominant. This phase should be compared with that of the French flamboyant, with which it is parallel, but the insular character of Perpendicular architecture is unique. The new expression, which is so entirely English, is best studied in the vaulting systems, the window tracery, and in the case of parish churches the elaborate woodwork of roofs, screens and fitments.

The fan formations, which are the main characteristics, resulted from attempts to aim at absolute symmetry in the setting out of a stone vault. This led to the adoption of a flat structural curve which forms the basic member of fan vaulting. Although this member is not apparent to the

eye, its purpose can be studied from the formation of the vault at the roof level. St. George's Chapel window, Henry the Seventh's Chapel, Westminster, and King's College Chapel, Cambridge, are outstanding models. In effect, the span of the vault between the enclosing walls is reduced by the fan-shaped supporting brackets or corbels on which the ribs are worked. At Westminster the panelled stone pendants act as internal counterweights. The introduction of heavy projecting buttresses on the external walls, with stone pinnacles or carved beasts forming additional counterthrusts, as at St. George's Chapel, Windsor, mark another stage in this form of design. In many churches the richness of traceried windows and of the panelled surfaces of the vaults is transferred to wall surfaces, which are panelled both internally and externally. The west front of Winchester, which dates from the late fourteenth century, is a case in point, one of the finest examples in miniature being the porch which forms the central feature of the west front of Peterborough Cathedral. The evidence shows that this porch was built to strengthen the piers of the earlier work. The tendency to reproduce the characteristics of great buildings to a smaller scale is evidenced in such examples as the Grammar School at Higham Ferrers, and in church porches with priests' rooms or schoolrooms over, as in the case of the porch on the south side of St. Peter's Church, Oxford.

The elaboration of timber roofs, already mentioned, is another characteristic of architecture of the Perpendicular Period. The finest specimens are found in the parish churches of East Anglia; corroboration of this statement will be found in the design of the roof over the nave and chancel of St. Stephen's Church, Norwich. This roof, consisting of sixteen bays, relies for effect on the repetition of the hammer beam trusses with infillings of vertical tracery, panelled cornices and enriched scantlings. Other examples include the double hammer beam roof at Knapton, Norfolk, and the beam roofs of the type of that over the Trinity Chapel, Cirencester.

During four centuries French and English Gothic architecture formed the main source of inspiration for the mediæval art of Europe, which, while following the great exemplars of both countries, indulged in minor regional variations.

Mediæval architecture, essentially the art of the Western Christian Church, owes its strength and beauty to the emulation of the guilds and corporations of cities. It arise under the patronage and direction of the

THE ART OF ARCHITECTURE

Church, and its story cannot be separated from that of the period which witnessed its rise. In its highest as well as its humblest moods, it is an expression of unanimity of thought allied to the finest craftsmanship. The lace-like transparencies, the ornate traceried windows, the soaring spires and pinnacled buttresses are witnesses to the triumph of mind over material.

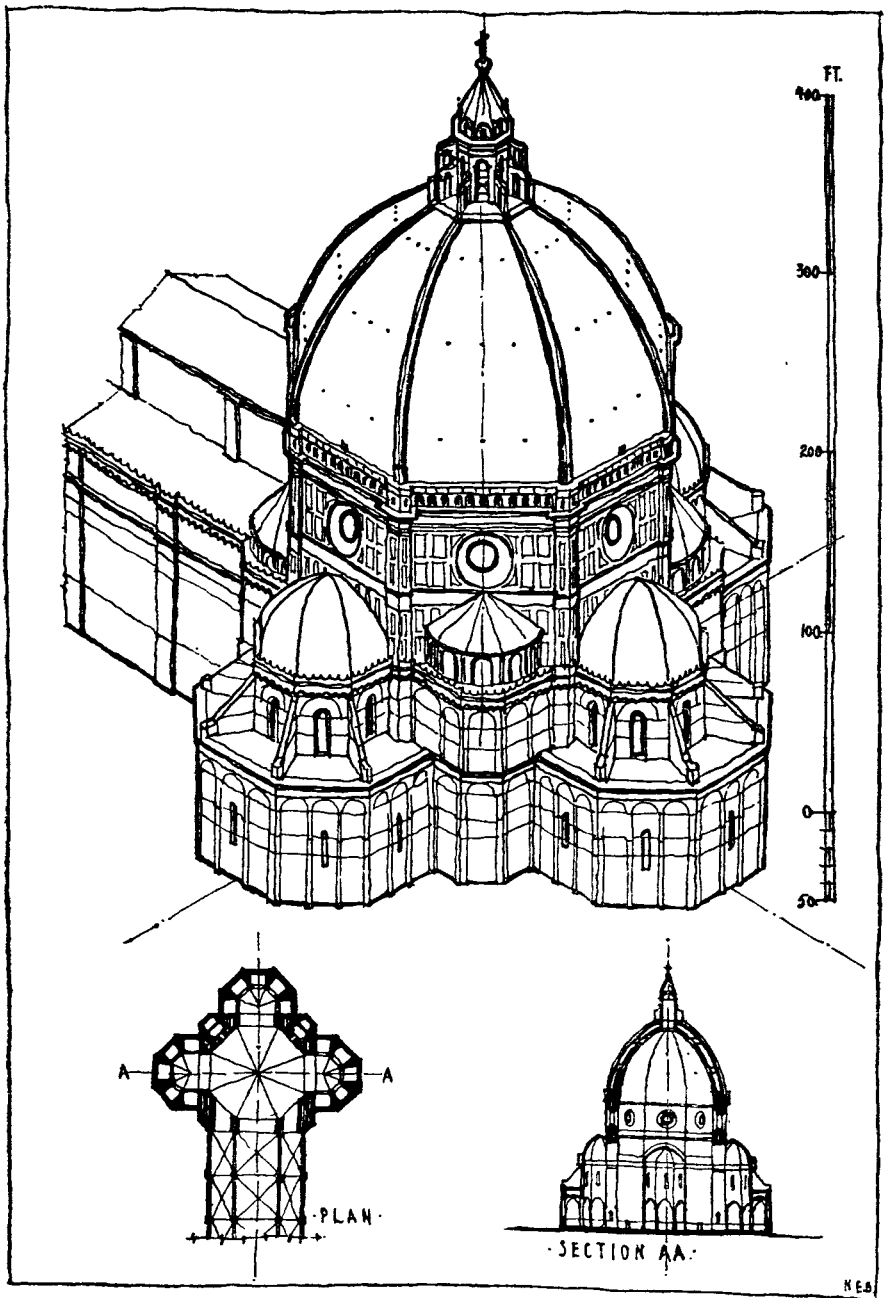
Chapter 4

THE RENAISSANCE IN EUROPE

THE CAUSES TO WHICH that great intellectual and æsthetic movement, the Renaissance, is attributed are complex. The efforts to unite Christendom under one authority, Pope or Emperor, had not been successful, the Church had already lost hold on the imagination of her sincerest votaries. The Crusades, which had failed in their primary purpose, had engendered conditions favourable to the revival of culture. Contact with the Near East, and particularly Byzantium, did much to encourage interest in antiquity. Classical knowledge, which had languished in monastic centres, was now brought nearer to the level of the people. There was already a wave of migration from Constantinople to Italy before the last vestiges of Hellenism succumbed to the onslaught of the conquering Turk. Broadly speaking, Byzantine Art culture was the primary influence that set things moving once more in a classical direction. It was essentially a Western movement, but the Renaissance in architecture was definitely a return to antique plastic forms. Innumerable masterpieces of early classical art were brought to light and studied.

The art of architecture, therefore, was directed back to a study of precedent and example. Henceforward design was to be the outcome of conscious study and the adaptation of historical elements to new problems. It was inevitable that the new learning should be employed to modify the outward expression of buildings erected within the frame of traditional or local conditions. But the great artists and architects of the Italian Renaissance were something more than imitators, they were men of genius able to mould ideas to their own individual purposes.

The cradling place of the Renaissance was Northern Italy, where existing structures provided scope for fresh experiments. The selection of



EARLY ITALIAN RENAISSANCE

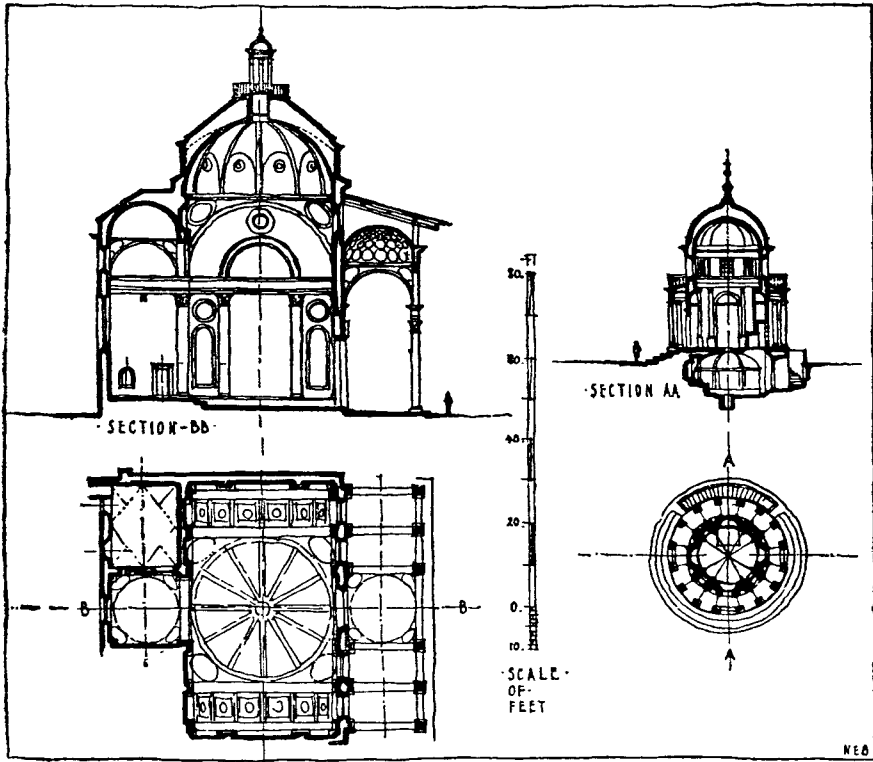
THE DUOMO, FLORENCE

(FILIPPO BRUNELLESCHI, *Architect*)

This early application of the principle of the dome to an existing mediæval building involved the employment of vaulted ribs. The internal and external silhouettes are identical.

THE RENAISSANCE IN EUROPE

the great crowning cornice in place of a wooden eaves, as at Coccaglio, marks the change that took place between the simpler façades of Pisa and the magnificence of the astylar Palazzi of Florence. The characterization of the three schools, Florence, Rome and Venice, can be sum-



ITALIAN RENAISSANCE

THE PAZZI CHAPEL
(FILIPPO BRUNELLESCHI, *Architect*)

ST. PIETRO IN MONTORIO
(BRAMANTE, *Architect*)

Types of small buildings showing the development of the dome. Both buildings are important links in the realization of Michelangelo's triumph at St. Peter's, Rome. Both show early treatment of the double dome.

marized as follows. In Florence the development of palace façades with surface treatments of graduated masonry, also the retention of semi-circular headed windows reminiscent of the style of Lombardy, are prominent features. For emphasizing the horizontal divisions string courses were introduced, the whole façade being unified by a huge

crowning cornice, the dimensions of which ranged from one-twelfth to one-fifteenth of the total height. The next development was the introduction of flat pilasters as ornamental features. The theory of the heavy rustication was no doubt inspired by the rugged masonry of the Aqua Claudia, while the pilasters echoed the external vertical divisioning of the Colosseum, the principle being the adjustment of the horizontal divisions, floor by floor, and the rhythmic repetition of windows of similar form. Nor must the sympathy of shapes between the fenestration of each level of the façade be forgotten.

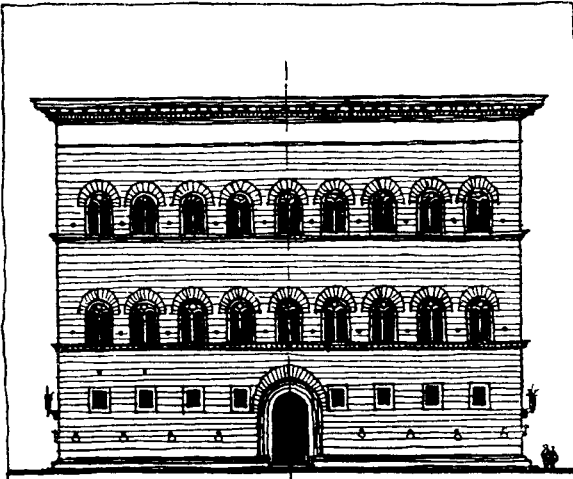
These changes could never have been effected but for the migration of Florentine architects to Rome and their enthusiasm for the ruins of classical buildings. If palaces of the scale of the Pitti and of the Strozzi evidence the aim of the architect to convey the dignity of civic art, the conception of the great cupola at Florence is even more sublime; from this sprang into being the most satisfying contribution of the late Renaissance, the dome of St. Peter's, Rome, and its attendant imitations.

The Pazzi chapel had been designed by Brunelleschi in 1420, and herein is to be seen one of the earliest examples on the small scale of the adoption of the cupola for pictorial effect. Henceforth the design of European buildings will not be entirely the outcome of necessity nor the literal exposition of structure, as was the case in the dome at Florence. The influence of classical models was manifested mainly in Rome, where the study of the orders initiated the various combinations of columns and pilaster for elevations, culminating in the introduction of the great order and the formulation of exact rules. In the design of the Cancellaria two principles are to be observed. The first concerns the outward expression of the floor levels by cornices and mouldings and the vertical subdivisioning by means of coupled pilasters from the first and second storeys. In this application of an ordonnance is displayed the acumen of Bramante, who invented a vertical disposition of contrasts. The second principle connotes the introduction of superimposed arcades, on the Lombardic model inspired by Brunelleschi; the arches resting directly on the capitals of the granite columns without the intervention of dossierets. The art of contemporary architecture was therefore developed mainly on the study of design in the treatment of façades. The rules formulated by Alberti were codified by Vignola, expanded by Palladio and such others as Serlio and Scamozzi. It is significant that the main theme of these literary aspects of architectural

ITALIAN RENAISSANCE

PALAZZO STROZZI, 1489

Expression of floors in elevation crowned by a giant cornice. Astylar treatment accentuated by repetition of windows.



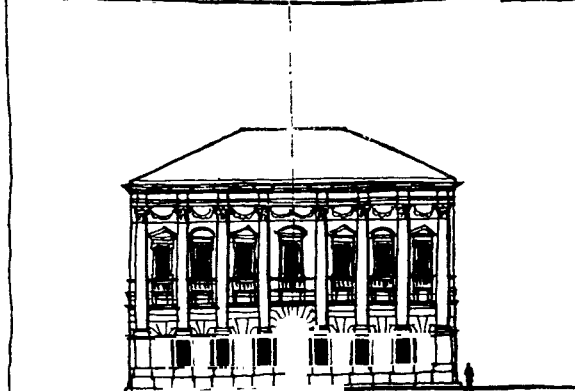
PALAZZO MASSIMI, 1529

Expression of ground-floor storey by a columned portico demanded by requirements of plan.



CASA DEL DIAVOLO, VICENZA, 1555

Vertical expression dominant. The giant order placed on a pedestal is repeated to frame the fenestration.



SCALE 10 0 20 40 60 80 100 FEET.

N.E.B.

scholarship centred upon the proportions and application of the orders and classical features. Another factor which favoured architecture in the early Cinquecento was the peace that followed the wars of the Papacy. With the translation of the writings of Vitruvius into Italian by Cesariano in 1521, and the fully illustrated edition of 1567, there ensued an exaggerated view of the importance of dogmatism in classical design. In the meantime plans were subjective to elevations.

In the Palazzo Massimi in Rome can be seen the application of classical principles in design which, although derived from antique precedents, have been completely subordinated to the genius of Peruzzi. The plan of the two houses, designed for the brothers Angelo and Pietro Massimi, while marking an achievement in planning skill, embodies the principle of the cortile or open space, surrounded by rooms and derived from the Roman atrium. This principle of planning is to be seen on a larger scale in the plan of the Farnese Palace. The principal façade of the Massimi Palace is not only distinguished for its restrained detail, but for the remarkable structural integrity of the components. It is evident that the Doric order is introduced not only as a screen to the vestibule, but to serve as a support to the superstructure. The proportions of the ordonnance to this elevation are successful by reason of the distinct division between the lower part, which includes the order, and the predominant surface above the piano nobile and the private apartments. The crowning cornice recalls the manner of the earlier architects of Florence, while the use of the Doric order for the ground storey presages the masculine directness of the work of the school of Michelangelo. The Massimi Palace, in the accomplished proportioning of void to solid, no less than in the Hellenic character of the detail, constitutes a striking example of academic scholarship. The building in its simplicity is the culminating point of the pure Renaissance previous to the change towards greater variety in composition. The regard in which this design was held is to be seen in the treatment of the elevations of the Palazzo Uffizi at Florence by Vasari. In this latter building is evidenced the application once again of the principle where the use of an order is reserved for the lower floor supporting the astylar surface above. Here the parallel ends, for the Uffizi in its vaster dimensions and architectural incidents includes as its crowning feature an open loggia. It is interesting to notice that practically all public buildings of the Italian Renaissance include the loggia as a predominant feature, though differently treated

in Venice, Vicenza or Rome. On analysis, the façades of the Uffizi are found to rely on the repetition of a carefully studied bay.¹ This particular building has been taken as exemplifying the progress of academic study in design during the fifteenth and sixteenth centuries. It has been endeavoured to show that the technique of Alberti, Raphael, Peruzzi and Michelangelo resulted in formal conventions through slow experimentation.

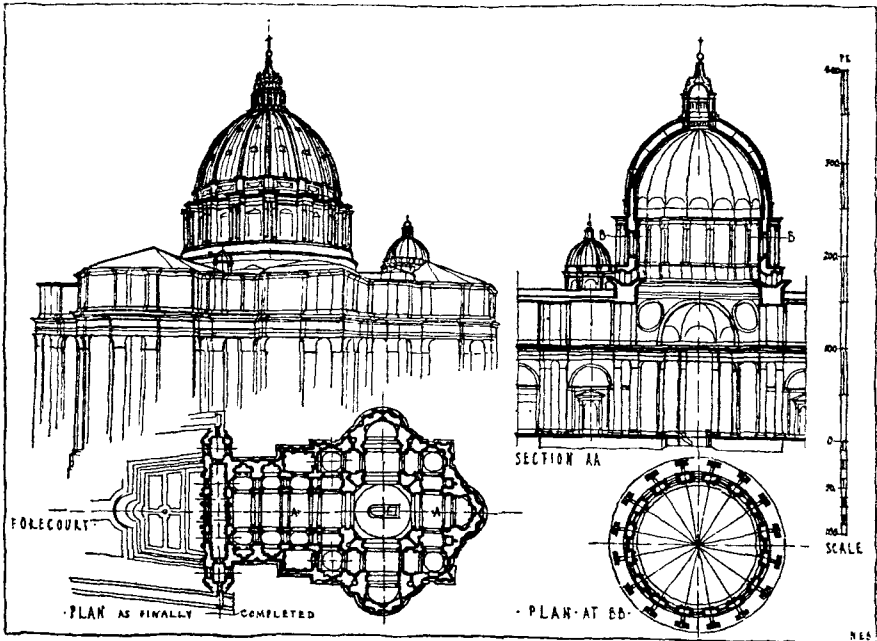
If Vasari's contribution represents the enlargement of the themes of the high Renaissance, the designs of Palladio have a grace resulting from a different reaction to antique and contemporary examples. It is the arcuations of the old Roman structures and the giant order favoured by Michelangelo that form the basis of Palladio's designs. The re-fronting of the Basilica at Vicenza occasioned the opportunity for the invention of the so-called Palladian motive; in other words, the combining of the arch with the column on novel lines.

This example on an extended scale of the superimposed loggia unified by the sympathetic fusion of two storeys with the scholarly superimposition of the Doric and Ionic orders forms a splendid contrast of vertical and horizontal subdivisions. The breaks over the entablature are justified as structural accents, and the contracting of the angle bays for strength proves the architect to have been a master of composition. The effect of the design, however, would have been improved had it included a low-stepped podium. In the designs of Vignola can be seen another facet of the academic movement which relied on systems of documentation and æsthetic theories. It is also clear that Vignola was inspired by the work of Peruzzi. The imaginative handling of the pentagonal castle of Caprarola, built in 1550, is his most original contribution. His forte was planning for perspective effects, aided by geometrical forms.

The progress of the Renaissance in Venice was due to the great Venetian families who acted as patrons to all artists. The Palazzo Cornaro Spinelli shows the persistence of the type of Gothic structure and the application of a classical veneer. In the design of the Palazzo Vendramini by Pietro Lombardo the horizontal and vertical subdivisions indicate how far classicism had advanced in Venice towards the end of the fifteenth century. The grouping of the windows, determined by the position of the great hall on the first floor, records a purely local condition; the tracery alone has assumed a classical

¹ As may be seen from the illustrations.

character. Later on, under the influence of Sansovino, the architect of the Libreria Vecchia and the Loggetta, Venetian palaces gained the dignity of the Palazzo Cornaro Della Ca' Grande, in which the rusticated basement storey forms the prominent feature, while the upper floors are equally divided. The penultimate development of the palaces in Venice is formulated in the Palazzo Pesaro by Longhena, where the composition is similar.



ITALIAN RENAISSANCE

ST. PETER'S, ROME

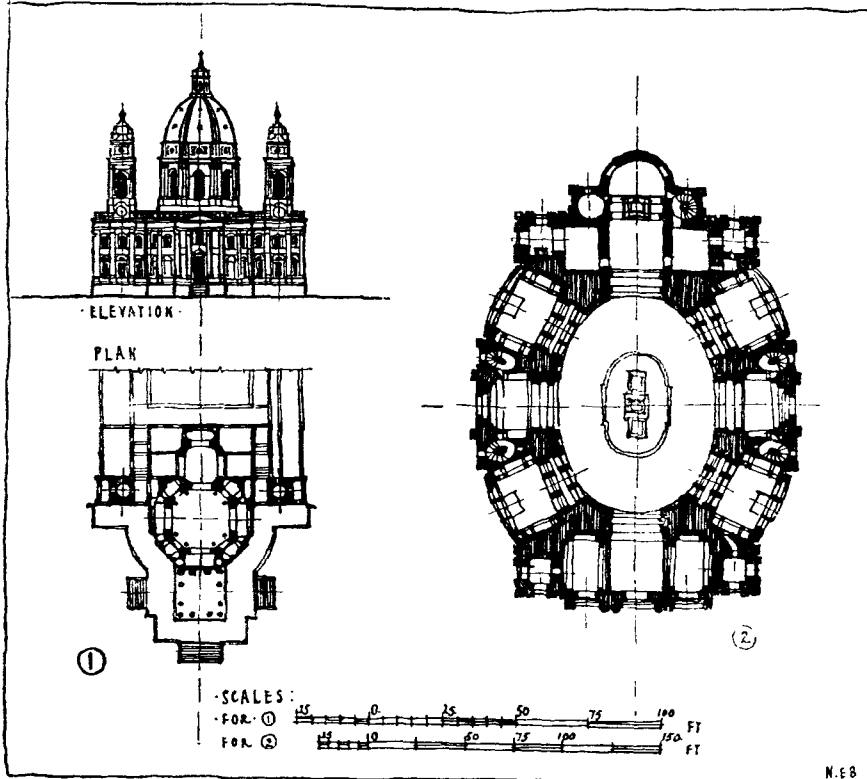
(MICHELANGELO, *Architect*)

The penultimate development of the Latin Cross plan. The double dome derived from Florence and other examples now assumes full volume externally and internally.

When, towards the close of the sixteenth century, the Renaissance subsided into reaction, the Church was once more the paramount authority. To ecclesiastical domination was added the power of Spain and the interference of the foreigner. The cultural outlook was changed, the result being that a new orientation was imposed upon art. There ensued an era of adventure in design which could not avoid being

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extravagant. It becomes clear, therefore, that Italian society was endeavouring to meet new conditions and that the architects, painters and sculptors grasped the opportunities to be original. The success attending their efforts is to be seen in those works which modern writers designate Baroque.



ITALIAN BAROQUE

THE SUPERGA, TURIN

A grouping showing a three-part composition of central dome with supporting campanili.

THE CHURCH OF THE MADONNA DI VICO

An experiment in curvilinear design with an elliptical dome.

A more definite explanation of the term "Baroque" includes all buildings of the seventeenth and eighteenth centuries which embody free interpretation of classical forms and express dynamic modelling. It is significant that towards the close of the first academic period greater attention was paid to internal planning. The reaction against rigid adherence

to classical rules coincided with the demand for new churches, religious establishments and universities. Once more clerical patronage was exercised, and this time spent its force in Venice, Turin, Milan and Genoa.

In Rome the completion of St. Peter's by Carlo Maderna and Bernini, and Santa Maria Maggiore by Rainaldi; in Venice, the church of Santa Maria della Salute by Longhena, mark the changes. The new Chiesa Santa Agnese, by Borromini and Rainaldi, at Rome, and the magnificently planned Santuario of the Madonna di Vico, are typical examples of the new exuberance in architecture.

The importance of the grand staircase in public buildings and private palaces had long been understood, but it was not until the seventeenth century that this feature became important enough to determine the external elevations of buildings. In the curious Baroque frontage of the Palazzo Carignano at Turin can be seen the ultimate expression of curvilinear ingenuity. The staircases which are so peculiar to the Genoese palaces were the outcome of the differences in levels on the various sites. These open pivotal features in the planning admit of splendid perspective effects. The imposition of monumental staircases implied large vestibules and landings; atmosphere in the plan was assured. When the later Genoese palaces were being built, at the beginning of the seventeenth century, their novel character attracted artists and architects from all parts of Europe. The measured studies made by Peter Paul Rubens were not without effect on contemporary European architecture, particularly in England.

The principles underlying Baroque architecture are those associated with silhouettes and surface interest, the use of concave and convex walls, together with innumerable breaks in cornices and string cornices. Pediments are set one within the other, columns and pilasters are grouped to form compounds, with large cartouches, consoles, corbels and brackets. The resulting complexity produced effects of light and shade and endowed the buildings with convincing modelling. The architects were never at a loss to combine plain and decorated surfaces, nor did they fail to embellish their works with appropriate sculpture. Such extravagances as exaggerated arabesques, twisted columns, broken pediments and scrolls formed features in the lesser works and furniture; one of the most notable examples being the design by Bernini, of the Great Baldachino in St. Peter's. A further departure from the academic

attaches to the design of ceilings, the plain wooden coffered treatments being superseded by painted plaster ceilings and coves in stucco, an example of which may be found in the Castello del Valentino, in Turin.

Chief among the main contributions, however, is the new grasp of external architectural composition, so original and vivacious, so fantastic yet so logical, which forms the basis of the Baroque. This new principle is that of grouped composition whereby a building is arranged in dominant and subordinate masses, with focal points of chief and minor interest and rhythmic progression of contrasting parts, both horizontally and vertically. Although it is true that during the early and middle periods of the Renaissance, fresh experiments had been made in elevational composition, these had not proceeded to that degree of plasticity reserved to be the especial manner of the later architects.

Peruzzi, Michelangelo and Vasari in their works showed how tentative architectural devisement had become. Both Vignola and Palladio developed austere and elegant submotifs and showed considerable ingenuity in the handling of masses. It was not, however, until the architects of the later Renaissance became conscious of their own power to subordinate classicism to a preconceived disposition of form that novelty in composition was reached.

In the design of the two churches facing the Piazza del Popolo, at Rome, the chief contrast is that of the pedimented porticoes with the domical roofs and lanterns; each building rising from the level of the pavement into pyramidal effect, thereby illustrating the principle of twin masses arranged in juxtaposition. The slight difference in scale of the church of Santa Maria del Miracoli over that of Santa Maria di Monte Santo, together with variations in the details of the minor features, results in balanced equilibrium. It is valuable to note Sir Christopher Wren's treatment of the twin domes at Greenwich Hospital, where exact repetition of silhouette achieves a similar result. The design of the church of Santa Agnese, at Rome, demonstrates, not only the principle of interest in silhouette arising from three component masses, but also shows how important it is to observe the law of contrast. The quest for pictorial effects in the Baroque manner produced fantastic essays in architectural composition. The drawings by Giuseppe Bibiena led quite naturally to the realization of designs for monuments in which drapery and sculpture combine with architectural features. Finally, such works as Rossi's views of Rome, together with the etchings by Piranesi, Vasi and

Rossini, and innumerable illustrated guide-books and woodcuts, provided pictorial inspiration for architects and artists outside Italy.

FRANCE

Enquiry into the causes which changed the architecture of France at the close of the fifteenth century reveals two facts of almost equal significance. Long before the actual forms of the Italian Renaissance were initiated in France there was already a reaction against Gothic. Latterly the invasion of Italy by the French in 1494 accentuated the developing appreciation for the Arts of Italy. While it is true that Italian artists were employed by the kings and the nobles to erect palaces and mansions, the evolution of French architecture towards a revived classicality would have ensued in the natural course of things if only by reason of the proximity of Italy and its works of art, the invention of printing and the general diffusion of learning. Those appearances, therefore, which are presented through the internal evidence of great edifices must be considered in relation to manifold associations of ideas, as well as resulting from lesser causes which combined to produce a great stylistic movement such as the French Renaissance indubitably became. As early as the fourteenth century the art of Siena had been introduced into France by the French popes at Avignon. At a later date Italian inspiration is to be seen in the sculptured works. A different aspect is presented in the case of the architecture which for centuries had represented the supreme skill of master designers, schools of masons and expert craftsmen.

Beginning, then, with these facts, it is evident that many issues, each and several in no small degree dependent the one on the other, operated to effect changes which have proved peculiar to French architecture.

French art of the sixteenth century began by being entirely different from the sources which inspired its earliest stages. In the springtime of the new movement old traditions were modified, old forms were allowed to persist; in fact, the Gothic skeleton in many cases was the frame upon which the newer upholstery was displayed. It was in truth the compromise between the sturdy methods of the French builders and the lighter essays of the Italian "architect decorator" that evolved the graceful interest of Amboise and Ecouen. At Châteaudun the mass of the structure is mediæval, but the gentle impact of Renaissance detail in the form of pilasters and embellishments to the turret windows, and to



various subordinate features, enhances the ensemble. As the new style found favour, so the compromise between the retention of old structural forms and the addition of derived classical detail became less marked. The circular bastions, steep roofs enlivened by lucarnes, articulated stairways in masonry and wood, immense chimneys, pierced parapets and heavy string courses, had perforce to be retained until social customs found no further use for them. The intricate design of Chambord, built in 1526, with its complexity of roof interest, shows how this compromise was allowed even at a time when exact symmetry was demanded in the balance of masses and minor parts. The rectilinear treatment of windows divided by mullions and transomes, as in the elevation of the house of Agnès Sorel at Orléans, indicates the suppression of Gothic detail and tracery. The open staircase at Blois, so often referred to as a triumph of the skill of the sixteenth-century architect, owes the very spirit of its conception to mediæval adventure under almost identical conditions.

The fact that the architects could point to the greatest of mediæval buildings as being French gave force to their own skilful adaptations of classic. The mingling of Gothic with classical details gave rise quite naturally to a picturesque style, which, while revealing its mediæval basis, belongs quite definitely to the new spirit of sixteenth-century Europe. Many features reminiscent of the native tradition were retained, or were used as motifs on which to display classical ornament. It was natural, too, for the Renaissance forms to be introduced in lesser buildings, such as private chapels, as well as smaller features in churches and cathedrals. In this way the design of screens, of choir stalls and of reredoses, underwent gradual change, and the two styles, Gothic and Classic, became almost imperceptibly merged. In the design of new churches, of which St. Eustache, Paris, 1532, is an outstanding example, the principles of the structure are Gothic and the system of ribbed vaulting is unchanged. Externally the faces of the buttresses are enriched with pilasters. Throughout the sixteenth century, apart from the Châteaux of the Loire, the chief contribution to the French Renaissance seems to have been the large number of town and country houses in which classic elements form part of the composition. This period of experiment with classical detail, more or less pure in its derivation, could not fail to produce buildings of great interest and picturesque charm. It is clear also that each experiment added to the estimation in which the growing style was held by each successive group of architects and patrons. Society in France

towards the end of the sixteenth century became more appreciative of the value of the Italian Renaissance. The thawing streams from Italy had flowed over the fair surface of the land and had given new life to her social culture. The great improvements accompanying the stabilizing of law and order under Henri Quatre gave opportunity for the encouragement of taste and scope for the newer type of learned architect who now entered the lists. Androuet du Cerceau, who formulated new theories of planning, Philibert de l'Orme, who furthered a study of structure and invented the French Doric order, were succeeded by the famous Salomon de Brosse, the architect of the Luxembourg.

In the design of the commanding gateway to this palace we have the termination of the first style of the early Renaissance in France. This particular feature is not only a contribution to the historical motifs for which the sixteenth century is justly famed, but it recalls Primaticcio's influence, and shows how the Italian spirit of composition had been accepted, modified and adapted by French genius.

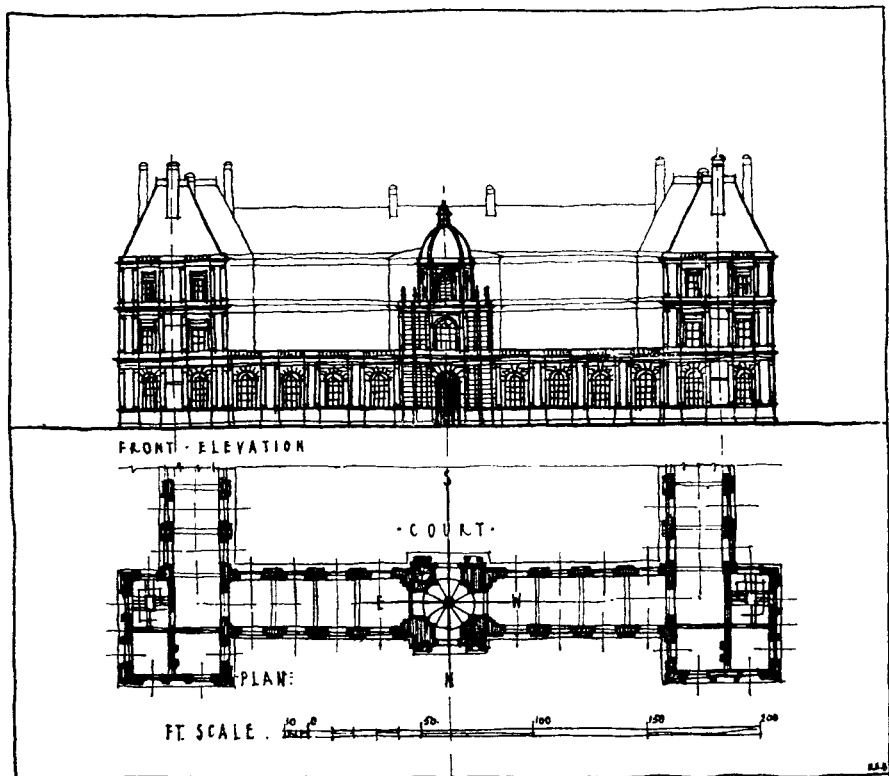
During the seventeenth century, following the wise policy of Henri Quatre and his minister Sully, greater attention was given to civic art, and this was not without an effect on the design of public buildings and the layout of squares and gardens. Both Richelieu and Mazarin extended this policy of encouragement. The success of the reign of Louis XIV, therefore, owed much to the wisdom and foresight of these able statesmen and the artists they patronized.

Reverting to Salomon de Brosse's designs for the elevations of the Luxembourg, the contrast of horizontal with vertical components obtained through the superimposition of two orders, although striking in itself, gains much by the weighty appearance imparted by the rustications. The introduction of coupled columns and pilasters as frames to arched openings foreshadows a treatment which forms part of the French classical tradition to the end of the eighteenth century. The evidence offered by the domed gateway seems to establish one of the most important links in the chain of domed buildings, extending from the first essays by Primaticcio to the Valois Mausoleum, and later on to the three domed churches of Paris, namely, the Val de Grâce, the Sorbonne and the Invalides. Of this latter series the dome of the Invalides, built from the design of Jules Hardouin Mansart, is by far the most successful. The impression is that the context is pyramidal and, moreover, the mass appears stilted from the base, thereby ensuring an effect of dominance.

THE RENAISSANCE IN EUROPE

The section through the three domes, inner, middle and the external skin, should be compared to the section through Wren's design for St. Paul's, which antedates the French example.

So far as a study of the domestic architecture can guide us, we find



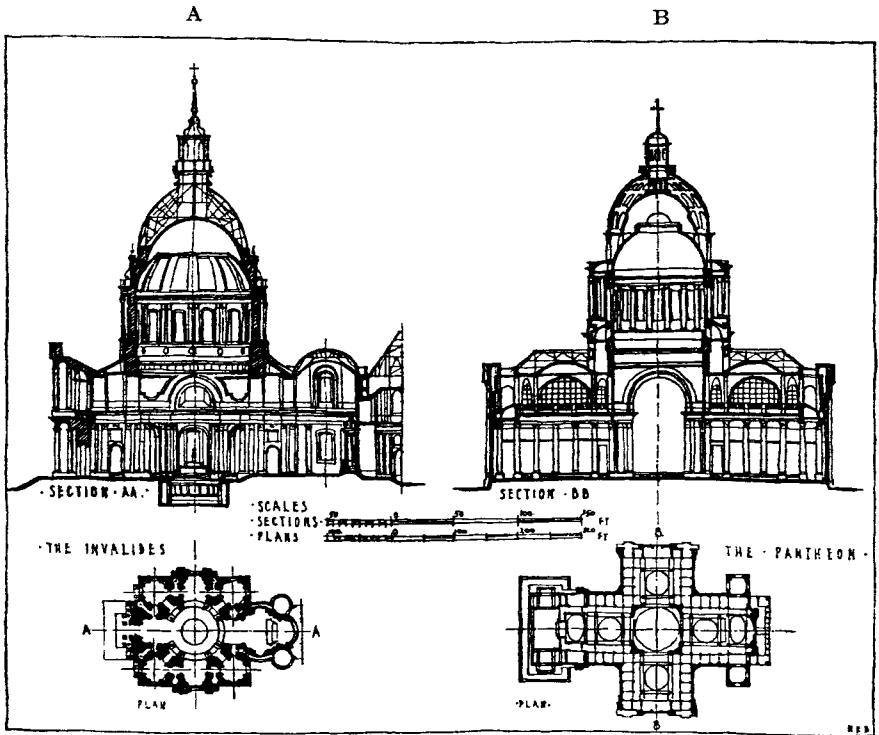
FRENCH RENAISSANCE

THE LUXEMBOURG, PARIS
(SALOMON DE BROSE, *Architect*)

The pavilion grouping accentuated by the domed gateway at the centre expresses three stages of French architecture, namely, the steep mediæval roof, the advent of the dome and finally the unification of the external composition by sympathetic treatment of the pilasters and rustications.

in the work of Le Mercier two fundamental principles, namely, symmetry and repetition, typified by his designs for the town and Château of Richelieu. In all the works by the elder Mansart, such as the Château of Maisons, also the Château of Vaux le Vicomte by Le Vau, studied com-

position is the keynote. At Vaux le Vicomte the elliptical salon is expressed vertically and becomes domical at its junction with the steeply pitched roofs of the wings from which it is detached. In this solution is to be seen a continuation of the earlier manner of the French Renaissance which decreed that each pavilion block should be roofed separately.



FRENCH RENAISSANCE

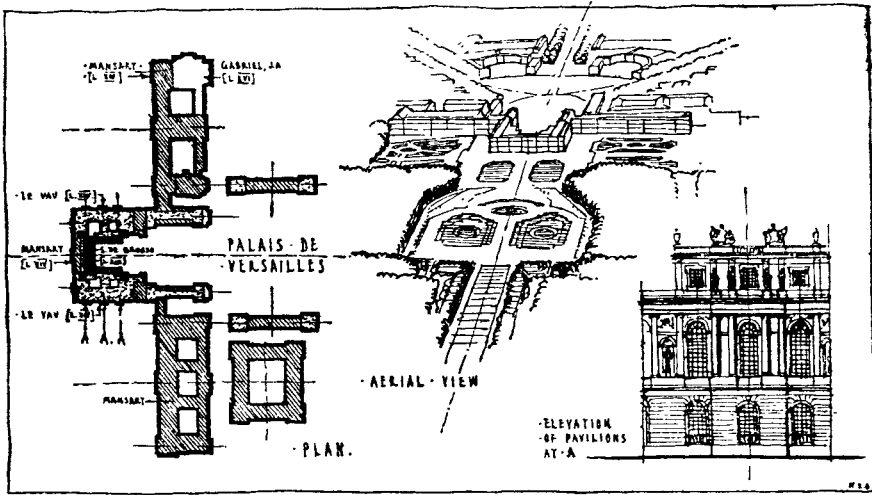
A. THE INVALIDES, PARIS. B. THE PANTHÉON, PARIS

In both cases the dome is designed for external silhouette. The dissociation of external from internal effect demanded ingenuity of construction, hence the adoption of the intermediate stabilizing shell.

But this very observance of tradition gave rise to a new method of composition which, while it allowed a dominant feature to be detached, also admitted of an increase of verticality. In the design of the Château of Maisons the grouping of the steep roofs is carried one stage nearer homogeneity, although the side wings are roofed independently of the

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centre group. Arising out of these and similar experiments in roofing, the mansard roof, with its many variants, became the most characteristic type. Following the traditions of the epoch Louis XIII, when, for reasons of economy, brick and stone were employed for elevational treatments, many of the lesser Châteaux as well as the street fronts of town mansions were designed in this manner. The building of the first portion of the Palace of Versailles offers the most perfect and most charming example of the successful commingling of brick and stone. Stone is



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THE PALACE OF VERSAILLES

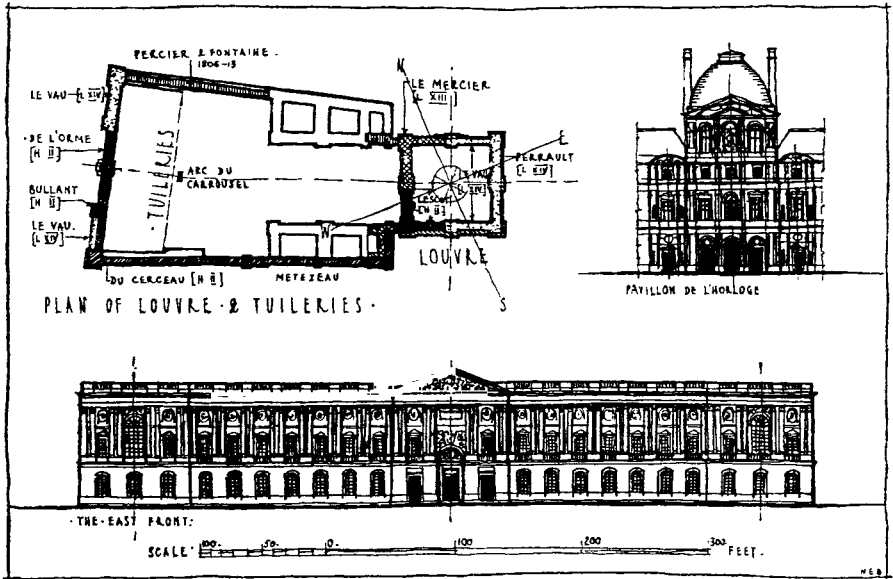
The avenue plan of the central group is developed through the entourage to embrace distant views. The dominance of the main axis is the principal theme in the composition.

reserved for quoins at the angles, for vertical strips, for window trims, for bases, string courses and crowning cornices. The logic of this method, as well as the retention of features such as corbels and consoles, can be traced to the deeply engrained regard for tradition inherited from the mediæval carpenters and masons.

Close examination of the famous examples of French architecture, evolved during the reign of Louis XIV, discovers some reaction against the steep roof and a further advance towards the supremacy of the giant ordonnance, embracing two floors. At Versailles can be seen

THE ART OF ARCHITECTURE

the lengthy façade, facing the Park, where nothing is permitted to interfere with the clear-cut monotony of the attic storey. Similar principles of composition were followed by Perrault in the design of the east front of the Louvre. Taking the widest possible view of the architecture of the French Renaissance at the turn of the seventeenth



FRENCH RENAISSANCE

THE LOUVRE, PARIS

Plan showing the complete development, including the sets of the Tuileries. The prolongation of the dominant axes is a feature. The long elevation by Perrault dates from the period of Louis XIV. The introduction of a double colonnade at the level of the first floor marks the matured period and is without precedent. Grandeur of result is due to the repetition of the double columns and the maintenance of horizontal silhouette.

century, it can be said that the reason for its excellence was due to a very close study of Roman precedent. The series of triumphal arches, of which the Porte St. Denis and the Porte St. Martin and the Gate at Montpellier are representative, show the transposition from Roman to French. No study, however, could be deemed complete which does not refer to the designs of the ingenious Daniel Marot, or the authentic engravings of Perelle and Le Pautre. Neither should the works of the

French military engineers be overlooked. Their treatment of masonry for fortifications in particular led to improvements in the design of bridges and viaducts. In this regard the services of Sebastian Vauban, Marshal of France, are the most conspicuous. The fortresses of Landau and New Breisach, the rebuilding of the defences of Strasbourg, as well as the remodelling of over one hundred and fifty strongholds, not only proved his skill but endowed France with monumental works of military character.

If we would understand the true spirit of the style of Louis XIV it should be considered as the expression of Art by the State for its own purpose. The masculinity inherent in the design of the great monuments and grandiose schemes of planning by the architects of this reign coincided with the dominance of a class in whom under the King the destiny of France was held. Classicism was at its peak, and the allied arts were developed in sympathy with the architecture. During the next reign the style lapsed into greater freedom of composition, curvilinear designs inspired by Oppenordt and Meissonier bordered on extravagance in the quest for novelty. These rococo tendencies, so skilfully interpreted in the Place Stanislas at Nancy and in the early work of the celebrated architects, Gabriel and Louis, eventually gave place to a return to the dignity of the style of Louis XIV. The revived interest in antiquity arising out of the rediscovery of the Greek temples at Paestum, and of the buried cities of Pompeii and Herculaneum, as well as the investigation of the Acropolis by the seventeenth-century archæologist Le Roy, affected the existing traditions, which were reinterpreted in a spirit more reverent to remote antiquity. In the design of the Pantheon is to be seen not only the last of the domed churches of the eighteenth century in Paris, but an attempt to interpret the grandeur of a Roman prototype in terms of the French vernacular. The style of Louis XVI not only conserved the old traditions, but recognized the principles of architecture which a long series of architects had so ingeniously built up, principles embodying symmetry, rhythmical repetition, focal points of interest and homogeneity of ensemble. Above all, the style of Louis XVI owes much of its expression to the selection of mouldings and ornament. With such examples as the Petit Trianon at Versailles, built between the years 1762 and 1768, the Monnaie in Paris by Antoine, and the dual compositions of the Place Louis XV, now the Place de la Concorde, we have all that is distinguished in this aspect of French architecture. In

such buildings as the Ecole Militaire is reflected that regard for the composition of masses in sequence, emphasized by the treatment of the roof, a system which began a century earlier with the pencils of Le Vau and François Mansart. The architects of the third quarter of the eighteenth century did not originate a new style of architecture, but they endowed the culminating period with examples of consummate grace. Here is shown the fruit of the academic discipline which embraced all French culture.

The tendency of architecture for some years prior to the Revolution had inclined to coldness; this may be attributed to a too close interpretation of classicism. In the works of the engineer Perronet, such as the famous bridge at Neuilly, there is evidence of acumen for structural devisement akin to that which inspired the designers of the great Roman constructions. We see the principle of repetition and the care given to the treatment of dressed masonry. But underlying the handling of the new engineering problems can be discerned the traditions implanted by Sebastian Vauban. In the lesser buildings, such as the old Ecole de Médecine by J. Gondouin, we have the principles of a pierced wall in the form of a double open colonnade with a central arched feature. In this case the composition is surmounted by a continuous attic storey. This design typifies the taste of the period of Louis XVI, in which austerity of grouping of component parts is relieved by bas-reliefs and architectural ornament at salient points. The framing of all decorative submotives and ornamentation is a feature of this period. The employment of wrought-iron screens, such as the famous example to the "Cour de Mai" at the Palais de Justice, Paris, 1776, belongs to the official character of the later type of public buildings then in vogue. There is a further reason for the academic classicality of the architecture of the late eighteenth century. This can be attributed to renewed interest in the antiquities of Rome, and also to the pictorial fantasies of such artists as Hubert Robert. At this time the plan of the theatre underwent modification. The fine example by Victor Louis at Bordeaux had demonstrated the advantage of a great vestibule and staircase occupying a space equal to that of the auditorium and the stage.¹

Strict adherence to classical principles and the invention of formulæ for elevations in the schools resulted in a detachment of expression which

¹ A plan destined a century later to influence the design of the plan of the Opera in Paris.

can be seen in the elevation of the Grand Théâtre at Bordeaux, the façade of St. Sulpice, Paris, by Servandoni, and numerous other classical buildings. Indeed, the architects in pursuit of abstract academic theories went far beyond the dictates of common sense. They sought to revive the actual letter of classicism and only succeeded in partially accommodating its spirit. The true expression of the architecture of the period is connected with such delightfully free essays as the theatre at Amiens by J. Rousseau, built in 1778-80, and the Hôtel des Monnaies, Paris, by Antoine, already mentioned. In the former example the character of the style attains its peak. In the latter the monumental quality is achieved. The façade to the river of the Hôtel des Monnaies is composed of three masses, the central pavilion carries an ordonnance of six Ionic columns, placed on an arcuated podium, in which is formed the main entrance. The supporting wings, each three storeys in height, are distinguished by the severity of the rectangular fenestration. The sequence of the windows, carried through the central feature, the contrast between the rusticated base and the plain ashlar masonry of the upper storey, relies on the dominance of the great console cornice which ensures homogeneity and binds the ensemble. The purpose of the architect to achieve the utmost monumental effect is to be seen not only in the handling of the projections, which are characteristically slight, but in the masterly treatment of the crowning attic at the centre of the façade. In no other wise could the peculiar regard for academic procedure in architecture have been brought to such unqualified success, almost without exaggeration and without effort. The question arises, how was this supreme ability in design attained. The style was related to that evolved by the architects of the reign of Louis XIV; it inherited, moreover, the whole spirit of the French Renaissance (true, it imitated the sterner moods of Roman antiquity), but it was the difference in modelling that really mattered, and this difference was associated with correctness of expression. To understand the style of Louis XVI at its fullest, reference must again be made to Soufflot's masterpiece, the Panthéon, Paris. In this case the architect attempted to surpass the design of the whole series of domed churches built hitherto. It was the beginning of the new outlook regarding giant scale, encouraged by the imaginative designs of Charles Nicolas Le Doux, which led eventually to such an anachronism as the Church of the Madeleine.

The change in the outward character of buildings that took place after

the Revolution, while disproving disruption of tradition, nevertheless brought about the cold formality amounting to nudism in design which became the style of the Empire. Yet this new manner on occasion could assume embellishments and bedizenments of great elegance. It could reflect fresh antiquarian tendencies, such as those made fashionable by the campaigns in Italy and Egypt. It became very largely the vehicle whereby the Napoleonic ideals in art were conveyed to almost every European country at the beginning of the nineteenth century. The likeness between the examples in Russia and those in Poland, Germany, Austria, Spain and Italy proclaims the genius of the French artists, particularly the fame of the architects Percier and Fontaine and the painter David, who led the classical group.

It can be said that the style of the Empire has the dignity of military officialdom. The report of the Commission appointed by Napoleon in 1810 to enquire into the state of the arts in France condemns the typically French school of Blondel, expressed in terms of superimposed columns, projections, pavilions, pilasters and appurtenances, while bestowing praise for the transposition of architectural details from classical sources. The outcome of this command was a vogue for bare surfaces with few voids and decorated with imitations of classical statuary. The gradual elimination of the orders for façades coincides with the formal design by Chalgrin for the Arc de Triomphe. The series of designs for houses in the vicinity of Paris, illustrated by Kraft and his associates in a volume published at the period, shows an astonishing variety of types. It is, however, in the interior treatments, such as the beautiful apartments of Malmaison, Compiègne, Fontainebleau and the Louvre, that the Empire style is to be found in all its essentials. Mention must be made of the value of comprehensive design for street architecture, such as the Rue de Rivoli, Paris, where simplicity of surface and the repetition of an elemental unit produce grandeur of effect. The style is distinguished for the vigour with which it emancipated itself from the pomposities of the *ancien régime*.

The classical ideals of the eighteenth century had passed through various phases and had reflected the turmoil of social life at each stage. This long supremacy in turn was followed by the introduction of new materials, namely, cast iron and steel, which enlarged the scope of planning on the great scale. The influence of the Ecole des Beaux-Arts now became paramount, and the tradition of nineteenth-century architec-

ture in France was evolved. The new ruling laid stress on the study of Roman planning. The publication, among other works, of Blouet's reconstruction of the *Thermae of Caracalla* and Daumet's study of the *Palace of Diocletian*, testify to the continuity of interest in the classical principles of design. To understand the factors which attended the destiny of the art of architecture in France during the last century it is necessary to keep in mind the influence of the illustrated works no less than the learned treatises on architectural design such as that by Professor P. J. Guadet. The studies of the post-graduate students of the *Villa Medici*, and the interest aroused by the researches of Viollet-le-Duc must also be taken into account.

In the nineteenth century France expressed the truths of social emancipation in civic and municipal improvements. Town planning on the great scale was instituted for the heart of cities. Schemes far in advance of their time were initiated, such as the new boulevards in Paris, and the Prado and the Corniche at Marseilles. These and similar essays were followed by Baron Haussman's scheme for Paris, the building of new bridges, harbours and docks, and the erection of railway stations. French architecture was ahead of that of every other country at the time, not only in the speculative work of the schools, but also on the practical side. Then was accomplished that close association between architecture and engineering which has never been lost. Of the part played by French architects in the intelligent evolution of architectural style towards modern architecture the foregoing is but a preamble.

NORTHERN COUNTRIES

Very different was the process in Germany, where the new movement eventually extended mainly by reason of intercourse between the merchants of Augsburg at Venice in the late fifteenth century. At first the sixteenth-century manner of Italy and France was followed in terms of heavy adaptation. Among the early examples the Castle at Heidelberg denotes acceptance of the application of orders and the value of horizontal subdivisoning in a storeyed façade. This building, strong in its influence, not only inspired the later work at Heidelberg, but doubtless familiarized classical features to the German mind. It is, however, in the works associated with the early seventeenth century that Germany arrived at a distinctive style of her own. In the design of the Rathaus at Bremen in 1612 may be seen the Gothic fabric

invested with classical details slightly French in suggestion. The Gewandhaus, Brunswick, 1592, reveals a frontispiece typical of the pyramidal treatment of gabled elevations; scrolls, terms and miniature obelisks form the terminations to the gabled portion, while horizontal divisions are underlined by cornices and string courses. The vertical divisions of pilasters and terminal figures are reminiscent of the style of Henri Quatre. The predilection for horizontal lines in elevations, which is so characteristic of the earlier buildings, recalls the lines of timber structures. There is perhaps no finer example than the façade of the Gymnasium, Bank Platz, Brunswick. At the beginning of the seventeenth century contact with Italy in matters of art became more certain, and in no case is this shown with greater force than in the design of the Rathaus at Augsburg, 1615; here is to be seen an adaptation of the Palazzo motif of the Roman Renaissance School.

In most of the ancient town halls of Germany the steep-pitched roof of mediæval tradition is retained, and the classical elements are conspicuous in the form of cornices, columns and crudely sculptured terminal figures. The horizontal treatment of the gable ends in a series of steps led to the invention of scrolled terminations; these, when repeated in series, are contrasted with obelisks. Such designs constitute the main motives of the early German Renaissance. So far the style, based on Gothic, and mildly inspired by the art of contemporary France, erred on the side of excessive elaboration of surface and of parts. The style was experimental, but the picturesque quality was not merely accidental, as is shown in the treatment of the loggia of the Rathaus at Cologne. In this case the motif has obviously been inspired from a Venetian model. One of the finest examples among the lesser town halls is that of Heilbronn, the chief feature of the design being the accommodation of a great clock and cupola as an integral part of the main elevation. It is clear that the steep roof was retained as a traditional necessary feature. The design of the churches, on the other hand, progressed from the German Gothic type, such as the Marien Kirche, Wolfenbüttel, in which classical features are concentrated on the gables, to the familiar designs of Potsdam and the Liebfrauen Kirche at Dresden, 1726-45. In this example the model upon which the design is based belongs to the fertile manner of the Italian Baroque. Not only does the plan display ingenuity of handling, but there is definite experiment towards originality of massing and piquancy of silhouette. It is also notable that

the stone dome, measuring seventy-five feet in diameter and carrying a stone lantern, appears for the first time as a new departure in German architecture.

Towards the end of the eighteenth century, Germany, in common with other European countries, experienced the force of archæological research in Greece. Contemporary buildings in Berlin, Dresden and Munich especially show the extent of this new movement.

The Brandenburg Thor, Berlin, built by Langhans in 1789, was undoubtedly inspired by Stuart and Revett's published work describing the Monuments of Athens. The student is referred to the vast works of the Greek School of which Schinkel and Leo von Klenze were the chief exponents. On the monumental side the works of Schinkel have the merit not only of imaginative planning, but of rare technique in the adjustment of Greek mouldings to modern buildings. The classical revival, however, as distinct from the earlier school of the Renaissance in Germany, is best seen in the street architecture, private mansions, garden houses, farms and cottage buildings erected in all parts of the country between the years 1780 and 1820.

The essential German Renaissance can be summarized as follows: its beginnings were inspired from France and a similar process of grafting classical features on Gothic structures was adopted. The effect of this process on the national art was to popularize the taste for classical details in place of the grotesque Gothic forms and ornaments. The new growth, therefore, was formed upon the old, and certain extravagances asserted themselves. So deeply was the taste for picturesque fantasy impressed on the German mind that it was not until the full scale of the great Palace at Versailles had been comprehended, that the German princelings became infatuated with the brilliance of French work. Herein lies the explanation of the design of Sans Souci built at the command of Frederick the Great, and also of the group of buildings at Potsdam. When the Baroque obtained a footing in Germany its coarser features were copied. It is interesting to find that when the Renaissance in its latest form was borrowed from the Italians and the Austrians, it became acclimatized most speedily in the churches and palaces.

THE NETHERLANDS

The position of the Low Countries, susceptible to the influence of both France and Germany, formed ideal ground for the development of

Renaissance art. Some of the spirit of the Middle Ages, freedom and independence, had survived at this time despite foreign oppression. It is not extraordinary, therefore, to find great versatility in design. The buildings in Belgium and Holland which were erected between the sixteenth and eighteenth centuries are characteristically regional; the domestic character of the Dutch, no less than their enterprise as a maritime nation, is revealed in the civic buildings, mansions and humble dwellings. The Dutch Renaissance buildings of the seventeenth century of the type designed by Vingboons show an originality for harmonious composition which reacted on the architecture of both Germany and of England. It was at this period that many of the existing mediæval churches received additions in the new style. In Belgium the Renaissance was adapted with even greater freedom. It must not be forgotten that at the time one of the greatest Flemish painters, Peter Paul Rubens, was influencing the world of art. The trade between Antwerp and Genoa coincided with the rise of the Baroque; it is not surprising, therefore, to find splendid examples of the latest phase of the Renaissance within the walls of the Belgian cities. The halls of the Guilds and merchant houses of Antwerp and Brussels reflect the prosperity of an exuberant and adventurous people.

Among the official buildings the Town Hall, at Antwerp, designed by de Vriendt, is typical of the fusion of two styles. The pyramidal treatment of the centre portion, Gothic in form contrasted with the horizontality of the rest of the façade, no less than the retention of a steep-pitched roof, ensures an agreeable silhouette. Although the "sentiment" of the central tower is Gothic, as well as the large mullioned windows, the superimposed orders resting on a strong arcuated basement storey form the main theme of a design which is purely Renaissance. The whole effect, however, is enhanced by the treatment of the open gallery, on either side of the central tower, which not only complements the more solid part of the elevation but acts as a foil to the central pavilion, and at the same time serves as an introduction to the steep roof. The design of this building proves that the principles of architecture are very closely associated with the elementary rules of contrast and unity. The spontaneity of handling in this case belongs essentially to a fusion of two styles. The Town Hall at Ghent forms a continuation of the early Gothic structure; this façade is composed of superimposed Doric, Ionic and Corinthian orders, framing respectively three storeys. It

is at total variance from the existing Gothic buildings. In the design of the Musée Plantin at Antwerp, an early expression of Flemish Renaissance architecture is seen. This building forms the frame of an internal courtyard laid out as a garden. The design is almost Gothic in its austerity. But the introduction of classical cartouches and light arcades supporting the heavier parts of the structure, no less than the stepped gables to the dormer windows, impart to the design a simplicity peculiar to the region.

In the Guild houses facing the Grande Place at Brussels is to be noticed the outcome of two opposing factors, namely, the vertical and the horizontal line, each reduced to a minimum, the result in several instances being an articulated elevation which relies for effect upon the dominance of the fenestration. In a word, the inversion of all that is nominally considered logical regarding the balance of void with solid has been achieved. The characteristic treatment of the gables either with pediments, towering pavilions, scrolls, finials and obelisks, as well as the complexity of the detail and ornament, binds the ensemble in free harmony. Mention must be made of the picturesque elements in Dutch architecture which show affinity not only to the Far East, from whence the bulbous forms were derived, but to the freedom, bordering on fantasy, which accompanied the rise of Belgian architecture.

The *flèche*, for instance, is a feature of both the Town Hall at Haarlem and the Neuen Kirche. In both cases the steeple form consists of small elements polygonal in plan and telescopic in graduation. The bulbous form is reserved for one of these elements as a contrast. Exceptional interest of silhouette appears to have been the aim. The suggestion that the steeple forms of Holland influenced the design of many of Wren's city spires and steeples is at least tenable.

In the ecclesiastical field it is not surprising to find the Baroque very much in favour. The Jesuit type of church is instanced in St. Michael, Louvain, which was built at the middle of the sixteenth century. Not only does this design follow the frontispiece treatment to be observed in the Church of the Gesu at Rome, but it echoes the façade of the Val de Grâce at Paris. There is the modification of the framed panel in lieu of a pediment at the top, which is far from satisfactory. The design of the Neuen Kirche at The Hague, built in 1654, is an instance of a baroque treatment in which a cupola forms the chief interest of the elevation.

SEVENTEENTH- AND EIGHTEENTH-CENTURY
ARCHITECTURE IN AUSTRIA

The extraordinary brilliancy attained by the architects of Austria during the seventeenth and eighteenth centuries forms an interesting phase of the Renaissance in Europe. The Baroque or fantastic manner initiated by Michelangelo and Vasari sped its destined course in Italy under Borromini, Rainaldi, Bernini and Longhena, and spent its force in imitating the fantasies inspired by Bibiena and later Piranese.

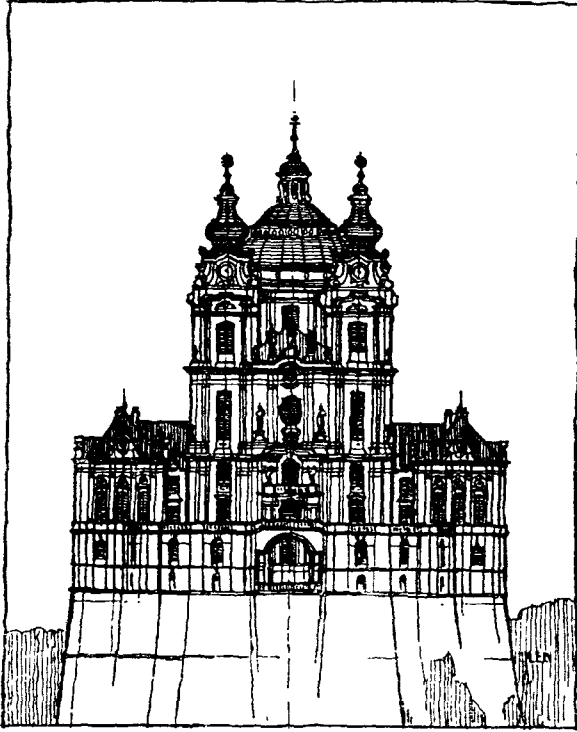
From the fact that the Catholic Germanic States nearest to Italy were the first to encourage this new form of plastic design can be inferred the adoption of this style by the Jesuits as an official expression for their buildings. Cities of the status of Innsbruck in the Tyrol, Salzburg and Vienna, reveal in the design of churches and monasteries how the well-known Italian exemplars were followed. The complete proof of these statements can be gauged by reference to the character of the architecture of the seventeenth and eighteenth centuries. The buildings offer a statement of the ingenuity of a group of artists whose aim it was to give novel expression to the classic manner.

Each successive analysis of a style narrows the field of enquiry to consideration of those buildings that matter from the point of view of originality in design. The majority of the plans of buildings pertaining to the Austrian Baroque show a predilection for curves introduced either for external or internal effects. Such is the case in the plan of the Belvedere of the Palace of Liechtenstein in Vienna. At the Schloss Farin in Mahren there is a saloon of oval form preceded by an elliptical vestibule. Similar curved treatments of the nature of a *tour de force* are found in the Dreifaltigkeitskirche at Salzburg, or the Piaristenkirche in Vienna. At the Peterkirche there is an elliptical formation which is checked at salient points by pylons.

At Schloss Klesheim, the ellipsoid is repeated three times with rectangular abutments. From these plan examples can be gathered the conspicuous intention of the designers to predetermine effects. In each case the architect employed the curve as a primary medium. These examples of the late seventeenth century resemble the compiling of various motifs, sometimes ill-attached and at other times rising to grandeur of architectural devisement. The parallel of these designs with the style advocated by Daniel Marot proves the fashion for curvi-

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linear treatment to have been universally adopted at that time in Europe. Herein is to be found the germ of the connection between the Italian Baroque, the school of Bernini, and that of Meissonier at the time of Louis XV. The Baroque in Austria as a manner of architectural expression can be divided into two methods: the one which consists in

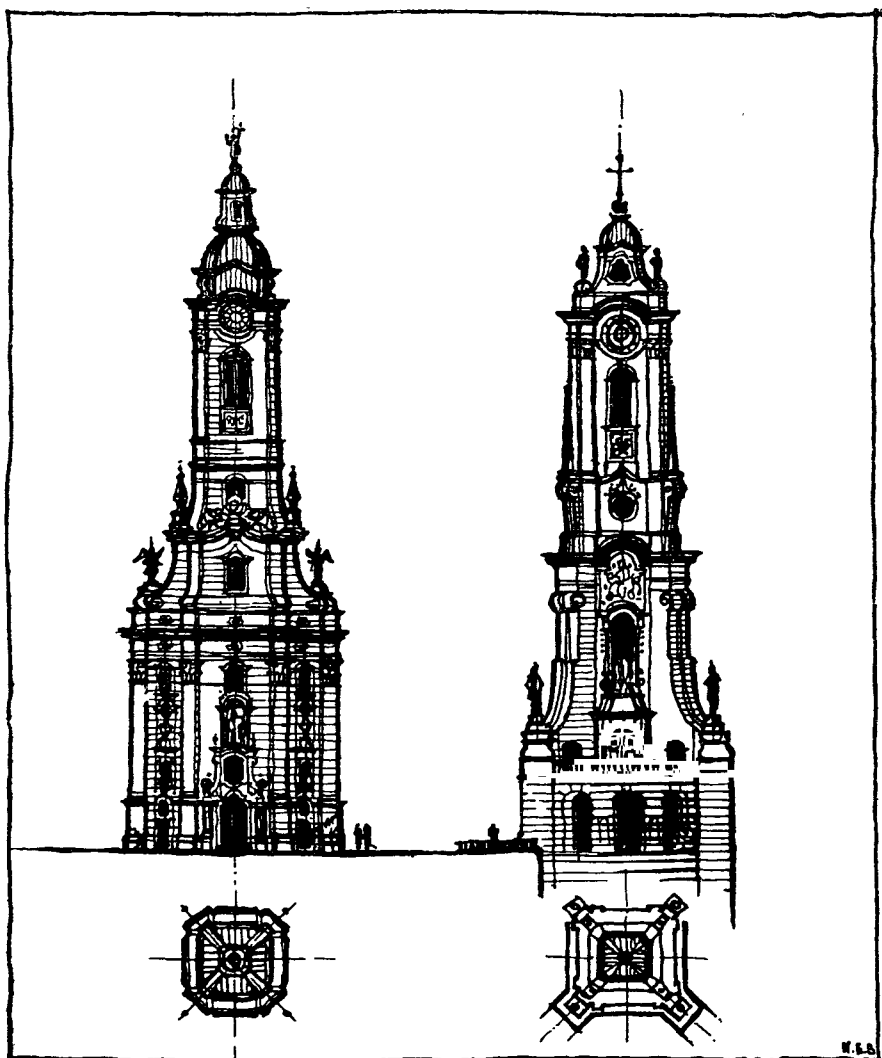


AUSTRIAN BAROQUE

STIFT MELK (PRANDTAUER, *Architect*)

An example of pyramidal combination on a restricted site. All sub-motifs are of curvilinear form, contrasting the one with the other.

having curved surfaces expressed elevationally, as in the design of the Dorotheaikirche in Vienna, 1689, or the Peterkirche; the other method introduces curvilinear details to windows, doors, cornices, pediments, towers and staircases, a typical example being the façade of the Stift Melk Monastery, built in 1702 by Prandtauer. This magnificent composition, with its twin towers standing on an eminence, expresses the vital spirit



AUSTRIAN BAROQUE

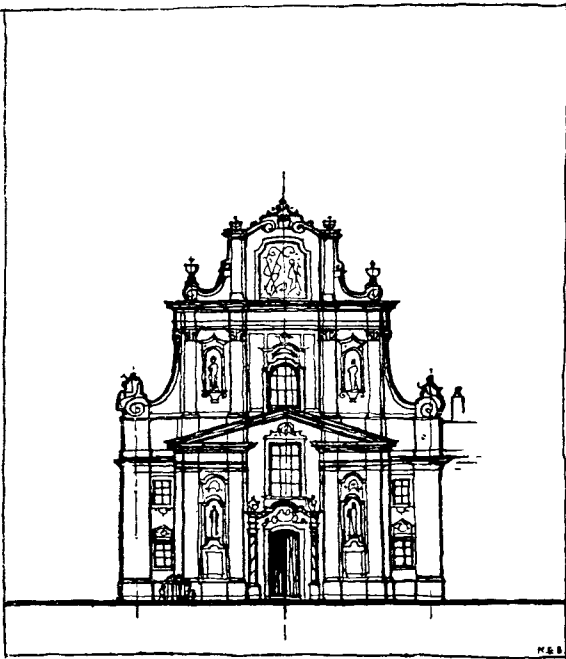
A. STIFTSKIRCHE IN ZWETTL, 1723.

B. KIRCHE IN DURNSTEIN, 1728

Elegance in tower massing accentuated by curvilinear outline.

of the Baroque in Austria. In the elevational treatments of the Wildenstein Palace, built in 1702, the curved enrichments are concentrated on the window heads.

Thus it is possible to verify conclusions by enumerating the most important particular facts intended by the original architects to be noted by the observant. These Baroque designs are nothing if not eloquent of the mastery of the plastic art, where freehand drawing qualifies the rigidity of mechanical precision. Light is thrown on the spirit of this fascinating style by the character of the monumental portals to the



AUSTRIAN BAROQUE

STIFTSKIRCHE IN S. ANDREI UNDER TRAISEN, 1735

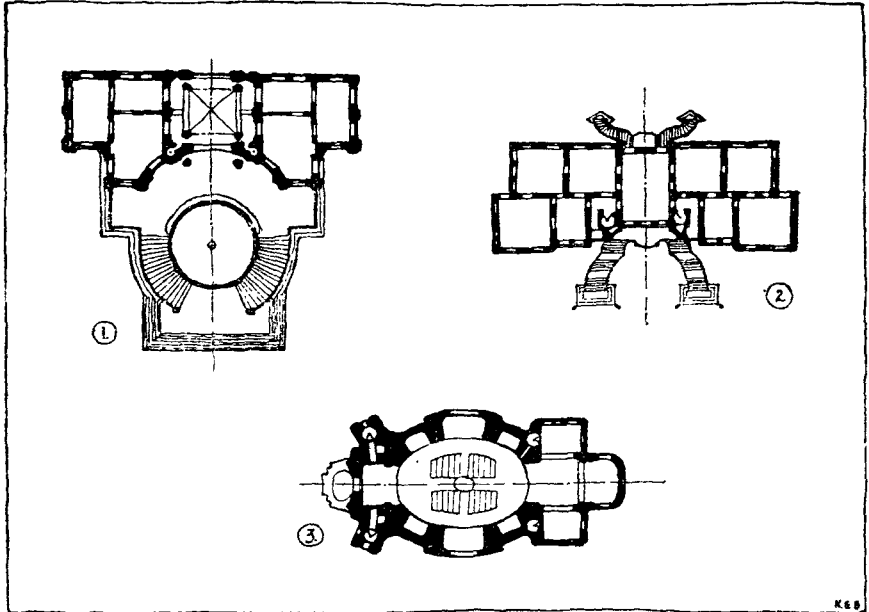
Austrian version of the Jesuistic style. The frontispiece recalls the manner of Vignola. This treatment in receding masses masks the nave roof.

palaces of Vienna and Salzburg. The main entrance, for example, of the Liechtenstein Palace in Vienna, designed by Hildebrandt in 1700, shows a design introducing caryatidal figures after the manner of Pierre Puget of Toulon.

In the design of façades, as for example the Fugger Palace at Innsbruck or the Altes Rathaus in Vienna, a strong Italian influence is to be seen, doubtless inspired by the contemporary buildings of Genoa or Milan.

THE ART OF ARCHITECTURE

The basement storey is usually rusticated with carved ornaments and curvilinear forms introduced to the window heads and to the sides of the fenestration. The treatment of the first- and second-floor windows embodies the introduction of cartouches, festoons, shells and masks. The maximum display of floral ornament was reserved for the crowning feature of an entablature which was sometimes pierced with heavily decorated openings. A feature of the façade of the Altes Rathaus in



AUSTRIAN BAROQUE

TYPES OF CURVILINEAR PLANNING

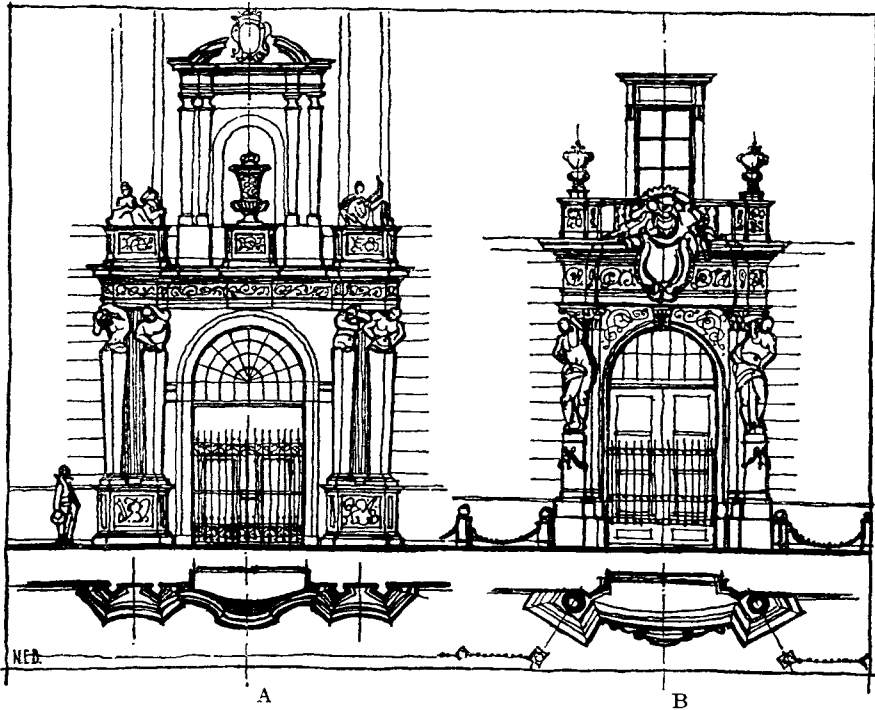
1, 2. External staircases.

3. Plan of elliptical church.

Vienna, built in 1700, are the twin breaks which extend vertically through the building to receive the monumental doorways with their appropriate attributes of columns, sculpture and cartouches. The Baroque, being essentially a forced manner of expression, admits of monumental staircases which are frequently placed on the front wall of a building and form an integral part of the composition, in some cases running behind pilasters as at St. Florian, Stiegenhaus. In this building the main curved portal forms a central composition with caryatids supporting scrolls,

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and pedestals with figures. This arrangement is extended still further in a vertical direction by the framing of the first- and second-floor windows in the axis of the portal, by caryatids, vases and sculpture. Great attention was given to the design of the façades forming the sides of a Court of



AUSTRIAN BAROQUE

TWO DOORWAYS

A. HOFSTAKKAGERNE, SALZBURG,
1693

B. PALAIS LIECHTENSTEIN, VIENNA,
1700

Both designs show circular door openings where the usual architectural frame is changed by the introduction of sculptured features. The curvilinear plan ensures play of light and shade.

Honour, as at Schonborn, 1706. Here there is a central pavilion with corner tourelles at the re-entering angles.

Domes and towers are prominent features of the style, the theory of pyramidal grouping between the central door, the pedimented portico and the supporting tower, based on Michelangelo's original treatment for St. Peter's, Rome, being well interpreted. It is in the vivacious pro-

filing of the silhouette of the Karlskirche in Vienna that these propensities are best evidenced. The gratuitous introduction of the twin giant columns, necessary from the point of view of composition, completes the bizarre effect. Towers are sometimes placed near the angles of churches as at the Stiftskirche in Wilten, built in 1716. It was, however, in the treatment of extended elevations formed of pavilion supporting groups, after the French manner, that the Austrian Baroque best excelled. We have proof of this in the elevation of the Schloss Belvedere in Vienna, 1720. The production of elevations which should be of supreme interest, even to the reflection of the whole of the grouping in an artificial lake, seems to have been the guiding rule. The reaction on the Austrian mind of the style of Louis XIV is likewise to be seen in the work of Fischer Von Erlach the younger.

Beginning with a taste for classicality, the Austrian Baroque extended the free spirit of design, invoked by the later Italian architects Guarini, Juvara and Vitozzi, into a style which was an expression of a contemporary society obsessed with a passion for intricacy.

THE RENAISSANCE IN SPAIN AND PORTUGAL

In Spain a long series of contests between the Moors and the natives of Iberian stock did not fail to mould the peculiar art of the country. In order to understand the way in which the art of architecture changed to the classical, and continued the natural evolution of the Renaissance, it becomes necessary to scan historical events. The fall of Granada in 1492 sealed the freedom of Spain and marked the beginning of a new era of church building in the conquered provinces. In the changes that took place afterwards the religious enthusiasm inspired by the Jesuit Ignatius de Loyola was the driving force in the erection of a magnificent series of religious buildings. The age was propitious for the growing power of Spain. It was the extension of Spanish rule over the Netherlands, Sardinia, Sicily, Naples, Germany and Austria that gave Spain the hegemony in Europe.

Under the Emperor Charles V, the conquest of Mexico, Peru and Chile completed the supremacy of the greatest military and naval power of its time. The naval victory over the Turks at Lepanto in 1571, when Spain and Austria were allied, seemed to be a more auspicious event, until the defeat of the Armada, a few years later, marked the decline. In the seventeenth century the former grandeur of Spain diminished, but

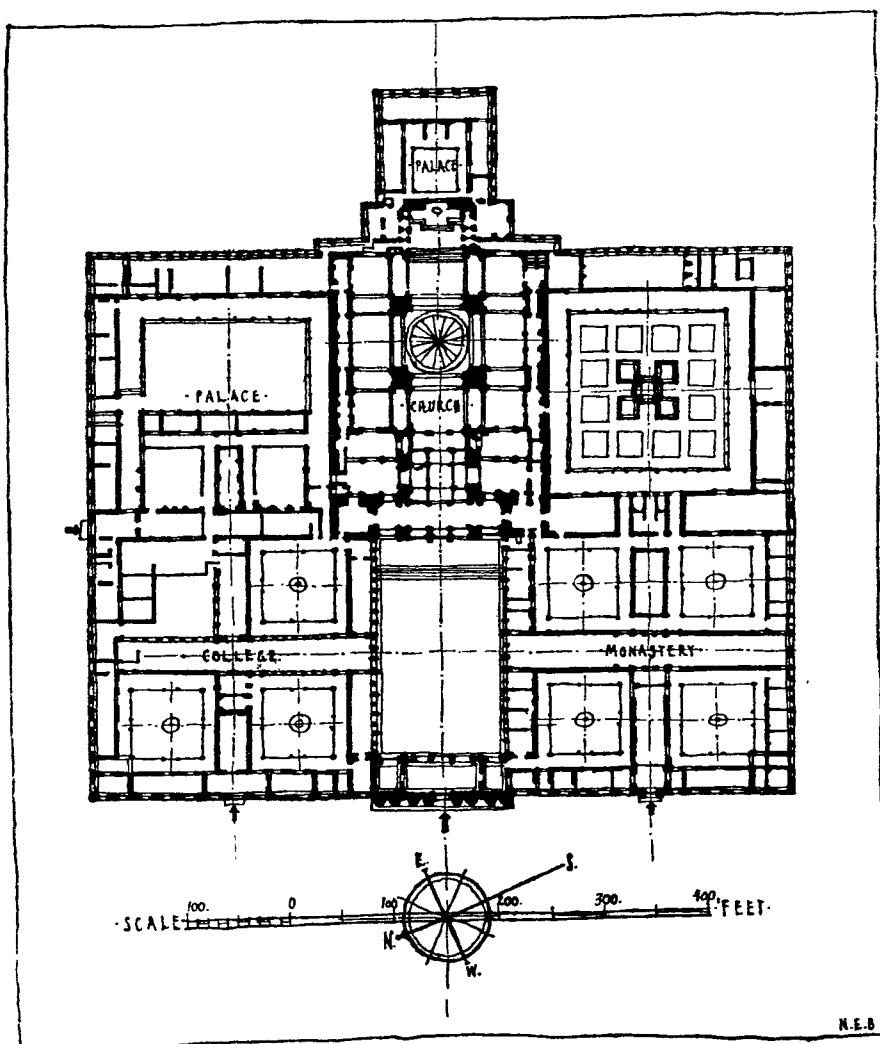
she still maintained her colonial empire. The War of the Spanish Succession, in the early eighteenth century, once again brought Spain into the European arena. Finally she succumbed to the onslaughts of Napoleon. These events, so briefly described, were not without effect in the development of the Arts. The love of the beautiful, deeply rooted in the Spanish soul, enlivened the imagination of generations of artists and craftsmen. It was, however, contact with other countries, by trade and warfare, no less than wealth from the West Indies, that ensured the progress of the Renaissance in Spain. The truculence of the southerner reflected in Spanish architecture is perhaps its most characteristic note. In buildings large and small a ray of luxurious warmth is seen in the embellishment of focal points such as doorways and other minor features contrasted with breadth of wall surface. Individualism in design, associated with all examples of the Renaissance, is seen displayed at its fullest. One views with admiration the incomplete palace of Charles V at Granada, no less than the intricate labyrinth of the Escorial. But the full canvas of Spanish Art is not to be dismissed so lightly. In a manner which can be compared to the Gothic, the chief examples of the Spanish Renaissance show an exuberance of carved ornamentation, the exotic influences commingling with themes from Italy and France. An attempt to survey the origins of the Spanish Renaissance in its early stages brings into view the mergings of Gothic or Moorish motifs with classical details. The Plateresque or silversmith's style was the result of these tentative experiments. The full system of Italian rules was, however, to be propounded by Michelangelo's pupil Juan de Herrera. This classical period, associated with the names of Berruguete and Herrera, succeeded the period during which the picturesque quality of Spanish architecture was spontaneous.

The special conditions of southern climates commanding architectural design, namely, large wall surfaces and small openings, or conversely wide openings such as verandas, open galleries and loggias or projecting balconies, preceding the main apartments and groups of rooms in buildings, form pictorial attributes of serenity and charm. The portico or courtyard, reminiscent of the Roman atrium, is the nucleus around which rooms are grouped. The steep roof is conspicuous by its absence; on the contrary, the tiled roof of low pitch, or at times altogether level, is the dominant factor in the treatment of elevations. The regional

characteristics of Spanish architecture are due to the use of local stone and the amorphous marbles in which the tableland abounds. At the same time the student should be cognizant of the fact that brick was used with stone in some districts such as Granada and Toledo, where Moorish influence prevailed. The principles which the artists invented, maintained and codified were framed in slow time.

It will be acknowledged that the artistic labours of the sixteenth and seventeenth centuries, the practical aspects of architecture, of sculpture and of decoration, redound to the genius of the Spanish race.

The earliest phases of the Plateresque style enlightened by spontaneity of form and detail are very telling. The College of San Gregorio at Valladolid has curiously shaped Gothic cusping in its main portal with Moorish patterning for the background. In the gallery to the court of the same building many of the details are of pre-Renaissance character. The spirit of the composition is noble, being rhythmic in the repetition of the bays. The treatment of the portal of the University of Salamanca retains equally one of the most impressive Gothic motives of a dual entry surmounted by a screen-like treatment of the wall over. In the latter a superimposition of diminutive pilasters, contrasted with horizontal mouldings and enriched with arabesques, shields and roundels, conveys the impression of a magnificent panelled reredos in stone. An example of the fusion of the new style with the old is to be seen in the portals of great buildings which are the first to show the change in manner. At the University of Alcalá de Herrerías a similar idea underlies the treatment of the main entrance. In this case the orders are coupled and superimposed, the upper division displaying a huge coat-of-arms. The composition of the façade consists of one main mass with two wings of lesser height. The subdivision of the main windows, on either side of the entrance, no less than the insistent note of the arcaded gallery which constitutes a crowning frieze, directs attention to the rich contrasts in detail such as the side scrolls to the windows and the beautiful iron grilles. Examination of other buildings reveals the existence of two-storeyed porticoes, such as the Casa de Miranda at Burgos, which has bracket capitals suggestive of timber prototypes. The system of following Roman precedent shows a newer discipline, as in the design of the palace of Charles V at Granada, by the architect Pedro Machuca. The façade in this case shows the ordinary motif of superimposed orders, i.e. with coupled columns, the windows following the manner of Raphael's



THE RENAISSANCE: SPAIN

THE ESCURIAL NEAR MADRID, SIXTEENTH CENTURY

This plan combines a cathedral church with a royal palace and monastery, the dominant volume of the balanced plan being the great church.

design for the Pandolfini at Florence. The roundels, which are introduced above the large pedimented windows on the first floor and over the smaller openings below, recall the earlier style of the Plateresque.

The chief feature of this really great design is the internal circular court. Here exists the full acceptance of simple geometrical forms in planning on the great scale. The fulfilment of this manner is to be seen in the austere plan of the Escorial, an attempt at grandeur which is too compact to be successful. One outstanding quality, however, of the design is the predominance on the main axis of the great domed church with its pleasant silhouette.

Spanish architecture of the sixteenth century owes much to the talent of the great Herrera. The façade of the cathedral at Valladolid reveals the manner of Vignola and at the same time follows the main lines of the Church of the Escorial. Although unfinished, the full value of the design can be judged from the model preserved in the cathedral. No other building in Spain expresses the aim of the Order of the Jesuits as this does, the entrance flanked by double columns framing niches, the sub-motif forming a horizontal centre with figures on pedestals, the upper storey of pilasters continuing the axes of the lower columns terminating in a pediment exactly expressing the lofty nave. The great scrolls on either side of the central features not only reach the Italian prototype of the Church of the Gesu at Rome, but serve as links between the two stages of orders.

The divisions of Spanish architecture are three, namely, the exuberant Plateresque, which followed the fall of Granada and lasted till the end of the reign of the Emperor Charles V. Then followed the period of Academic classic echoing the style of Palladio and Vignola, from 1560 to the middle of the seventeenth century. This was succeeded by that branch of the Baroque style initiated in Spain by Churriguero, and known as the Churrigueresque. It was continued as a manner until the middle of the eighteenth century.

Among the attributes of Spanish architecture of the Renaissance which have a national character are the steeples or attached bell towers which are a feature of the larger churches. These are not to be found in the Italian or French examples, and therefore are worthy of very close attention. With the exception of some Dutch towers and the highly original designs by Sir Christopher Wren, motifs of this type are rare. With the example of the tower of the Giralda at Seville, and the Moorish tradition of the minaret, it is only reasonable to conjecture that the Spanish architects felt the necessity for developing this monumental type of design. One of the finest groups of steeples embellishes the

cathedral of Santiago. Another solitary example is the tower and spire of the Seo at Saragossa. Here is to be seen the value of a storeyed composition of three vertical masses terminated by a domed and obelisk feature. The whole composition is supported on a strongly rusticated tower approximately one-third of the total height. An explanation of the beauty of this steeple is found in the elongated character of the orders which emphasize verticality in the design. Further, this verticality is accentuated by the breaking of the cornices and the subtle interest of the silhouette. Although more robust in proportion, the steeple of the cathedral at Malaga is designed on the same principles. The Spanish understanding of the value of picturesque vertical elements in architecture is also well evidenced in the external massing of the Escorial, where the predominant dome is supported by four subordinate towers, two of which are in juxtaposition with the dome and two are advanced to the extreme angles of the palace frontage. Perhaps the most important official building is the Royal Palace at Madrid, designed by an Italian architect, Sachetti, in 1737. This building in its rectangular formation resembles the great palace at Stockholm, by Nicodemus Tessin. The elevations suggest reference to the Palace of Versailles, but are on a much bolder scale. The introduction of a high podium containing three storeys reduces the ordonnance to an equality of proportion which is monotonous. The skyline is uniformly weak, but the details are vigorous and show sympathy with the Italian Baroque. The final phase of Academic architecture is best expressed in the façade of the Prado at Madrid. This building, the work of Juan de Villanueva, like all the buildings of the second half of the eighteenth century, stresses the importance of a giant order for the principal feature of the front. Although the attachment of the portico to the façade is weak, the treatment of the supporting wings, consisting of Ionic colonnades placed on an arcaded basement storey, is admirable. It is clear that the architect attempted a picturesque composition, but failed by reason of his selection of unsuitable elements.

Portuguese architecture of classical character follows the lead given by Spain. The earliest attempts to embody classical features with traditional structure can be seen in the cloisters of the great monasteries as at Thomar and elsewhere. The full influence of the Baroque is stated in the design of the Palace at Mafra, by a German named Ludovico. The composition of the dome and twin towers of the church at the centre

front is a departure from the acknowledged system of the principal feature being preceded by a Court of Honour as at the Escorial or the Invalides, Paris. The composition of this central feature is strongly reminiscent of the Church of Santa Agnese at Rome, by Borromini.

From the foregoing can be deduced the fact that all the contemporary buildings of the Renaissance in Europe were the outcome of close observance of precedent. The grand lines of the compositions are nearly always similarly treated, the variations of detail giving local colour.

At Lisbon, following the great earthquake of 1755, many buildings were reconstructed on simple lines, but there are none of great merit as public works with the solitary exception of the monumental place which opens direct upon the Tagus and constitutes a Royal approach from the river. There is no grander sight in the whole of Europe than that afforded by this noble platform at the water-level with the city rising in terraces on either side.

THE RENAISSANCE IN ENGLAND

Study of the development of classical art in England must be accompanied by consideration of the religious changes which took place in Western Europe. In this, as well as in the ordinary details of social life, exist the reasons for the acceptance of an exotic form of design and its subsequent grafting on to the existing stock. The actual details and ornaments belong to the subsequent trend of events.

The Renaissance in England divides into three main periods, namely, the Formative, the Mature and the Academic. The first belongs to the reign of the Tudors, 1500 to 1603; the second to that of the Stuarts, 1603 to 1714; whilst the third coincides with the Hanoverian succession, 1714 to 1837.

The Victorian period which follows occupies more than sixty years of the nineteenth century, and during this time of industrial preoccupation the established traditions were debased.

The primary reason for the acceptance of new ideas in art was the loosening of the close control of the mediæval Church in national affairs. Another reason was that London had become a great trading centre. Also the democratic spirit was in being and America had been discovered. It is not surprising, therefore, to find that change was welcome in whatsoever form it was presented.

In architecture we have to distinguish between the survival of Gothic and the application of Italian ornaments and special details to new buildings, as well as screens and tombs in churches. It was inevitable that the insularity of the race should tend to preserve the characteristics of much that was inbred. The Renaissance, therefore, soon after its arrival in England, was acclimatized and became essentially English. Under the Tudors new impetus was given to the adventurous ideals of the English people, the root basis being the development of trade.

Italy was the land of learning; from Italy came Grocyn, Lylie and Linacre with a store of Greek literature, Latin grammar and new theories of medicine. The leading class in England was the landed gentry and the squires, with infinite gradations of wealth and rank. The buildings which remain from those days include the country palaces of the nobles in stone or fine old English brick; the stone-built manor houses of the Cotswolds, and the brick, stone and timber houses which exist in all parts of the country. The conditions favoured every type of Tudor building which arose according to the materials of the region. London acted as a lodestone, and the Capital issued ideas which were absorbed by the countryside. It is not surprising to find that the example of royal patronage of foreign artists should have been emulated by the nobility in the design of tombs, and that the native craftsman should in turn have become imitative of the new forms. The Tudor became the great period of domestic architecture, the very foundation of all subsequent achievement. When Torrigiano brought the first Italian forms to England and applied them to the tomb of Henry VII in Westminster Abbey, Brunelleschi had been dead for seventy years and Venice was exulting in the first of her new palaces on the canals. Another great figure stands out—that of a German, Holbein, who is credited with the design of the great gateway at Whitehall, in which roundels similar to those at Hampton Court formed part of the design. Names of Italians occur constantly as being employed by the King, and among others John of Padua occurs most frequently. But the Italian ornament we find attached to English art in the time of Henry VIII is chiefly superficial. It was through Dutch and German channels that the Italian manner came to be understood. During the reign of Henry VIII the character of Renaissance work inclined both to Italian and to French.

Perhaps the earliest example of a purely classical character is the magnificent rood screen in King's College Chapel, Cambridge, 1532-36.

This is more completely Italian in treatment than any other work of the time.

Apart from such evidences of ornamental detail of classic or Italian extraction on screens, tombs, chests and roof features, as at Hampton Court and elsewhere, we can trace the Italian influence in the plans of buildings. Between the years 1450 to 1635 the plans of houses underwent considerable modification. Plans became symmetrical and the open arcade, similar to the cloister, was introduced. One of the most valuable sources of information of house planning during the reigns of Elizabeth and James I is to be found in the collection of drawings in the Soane Museum known as the work of John Thorpe. This architect studied books on Italian, French and Dutch architecture, of which a considerable number had been published during the latter half of the sixteenth century. He copied at least three designs for a French house in one of Androuet du Cerceau's books, *Les plus excellents bastiments de France*, published in 1576-79. One of these designs is the Château of Ancy le Franc. This plan is almost identical with that of Houghton House, Ampthill, Bedfordshire, 1615.

Henry VIII employed many skilled foreign craftsmen and artists, especially Italians, while in the second half of the sixteenth century many Dutch settlers found refuge in England. Many of the former were both architects and sculptors. Benedetto da Rezzano designed the tomb of Cardinal Wolsey. Giovanni da Majano, noted for his sculptured work at Hampton Court, Toto del Nunziata and Nicholas of Modena, the latter described as a carver, were among men of outstanding renown. John Shute, who published *The Chief Groundes of Architecture* in 1563, called himself "Paynter and Archytecte." Robert Smithson, who died in 1614, fifty years after Shute, is designated in his epitaph as "Architector and Surveyor unto the most worthy House of Wollaton." But it is to Inigo Jones that the student turns as the first Englishman who studied architecture systematically in Italy, and who combined the functions of planner and designer of details. It becomes clear that the architecture of the sixteenth century was the result of the joint efforts of many different types of mind working towards a definite ideal. That the source of inspiration was the common one of the architectural publications of the time is acknowledged, as is the fact that for many years the Italian Renaissance was received almost at second hand. The ingenuity of the English designers on this showing becomes even more apparent. In

the early Stuart period a greater development in art took place. London, in spite of its position as a great seaport and its reputation as a mercantile centre for the Continent, was still mediæval in the aspect of its streets and buildings. The crafts and manufactures were carried on not only in the capital and the country towns, but in the villages. Everything awaited a master mind in architecture, and the need was met by the genius of Inigo Jones.

During the sixteenth century the chief buildings erected were great houses in town and country. It is in connection with the development of the house plan that compositions in the new manner are closely associated, as its arrangement gave the character of the Elizabethan house. In Tudor times the chief apartment was the hall, then followed the kitchen with its offices. Next in importance were the private rooms. The central group, consisting of hall, kitchens and parlour, formed the nucleus of a system of house planning in being for a considerable period before the Italian influence was felt.

Great Chatfield in Wiltshire, built in the reign of Henry VI, shows this arrangement to perfection. A similar arrangement exists at Oxburgh Hall, Norfolk. In the transition from the Perpendicular to the more pronounced Italian type of plan the observance of rectangular symmetry is more definite. At Sutton Place, Surrey, 1523-25, this regard for symmetry and alignment of minor parts is accompanied by a conservative regard for Perpendicular mouldings, tracery and battlements. This building can be regarded as being of importance in the transition from Gothic to Renaissance, inasmuch that Italian ornament makes its appearance in the large casement mouldings. Viewed broadly, the trend of design during the sixteenth century appears to have been the quest for symmetry both in plan and elevation. One of the most conspicuous examples of this desire for balance is evidenced in the treatment of the south side of the courtyard of Kirby Hall, Northamptonshire, which was built between 1570-75. In this case the intention of John Thorpe appears to have been to emphasize the great size of the windows to the hall, and to repeat those windows on the other side of the porch without regard to the size of the rooms.

In contrast to the great windows, the porch maintains its position as a focal point, more by the multiplicity of parts than by definite relation of theme. The date at which this porch was built not only reveals the considerable advance towards the application of the orders, but furnishes

proof of the skill of the Elizabethan masons. The picturesque quality of this central feature is undeniable, consisting as it does of superimposed Ionic and Corinthian orders arranged in pairs, the whole feature being crowned by a blind gablet enriched with seven Corinthian columns of smaller size.

The next advance concerns planning, and is to be seen in the evolution of the "H" type of plan, as at Montacute House, Somerset, built by Sir Edward Phelips in 1580. In the arrangement of the court, with its enclosing balustrading and garden houses, can be discerned recognition of contemporary French practice, as shown in Du Cerceau's designs.

The design of Wollaton Hall, Nottinghamshire, built between the years 1560-88, indicates an even more striking example of the search for symmetry in plan and elevation. The grouping of apartments to frame the central rectangular hall, the projecting pavilions forming towers at each of the four angles, the emphasis given to the silhouette by tourelles and pinnacles, show the eagerness of the designer to invent a perfect type of mansion. The classical orders which are superimposed at the angles of the pavilions, in three tiers and at the junction of the retreating angles in two tiers, form the ordonnance of the building as far as this classical theme could be related to the rectangular mullioned and transomed windows. The tracery of the four great windows of the upper part of the central mass suggests a motif taken from an early Venetian palace. Wollaton is often spoken of as an exotic type of mansion. Actually it is one of the most interesting examples in stone of this period of transition, revealing as it does several derivations of Renaissance detail from contemporary work on the Continent. With the advance in planning and the composition of elevations, the gable as a feature was gradually eliminated. This change is best seen in the design of Burghley House, Stamford, which is of such vast size and consists of so many features as to almost defy analysis. But the general theme can be summarized. The boldly projecting turrets, bay windows, grouped chimney stacks and enriched parapets are brought into relationship by horizontal string courses and cornices. It is clear that each elevation was made the subject of study.

Curious as it may seem, the main developments of architectural design in the sixteenth century were concerned with the gradual elimination of forms and details which were regarded as old-fashioned. It is precisely these considerations which provide the key to the story of any phase of

architectural history. During the reigns of Elizabeth and James I, the ruling classes immediately supporting the crown had assumed a dominant position in the national affairs, the command of country districts under the monarch descending by graduated stages from the noble to the squire. It is not strange, therefore, to find a relationship between the design of the great house and other contemporary buildings and cottages in the towns and villages. Very often the noble owner of a mansion, after superintending the design of his own house, directed the building of the local inn, or other buildings forming part of the estate. It was this observance of local tradition and custom in minor matters which gave strength to native architecture.

The impetus given to the building of mansions and the founding of estates was continued in the reign of James I, the difference in the case of design being a closer observance of classical rules, which now became the objective of the new order of surveyors and architects. Columns and entablatures were fashioned more in accordance with authentic models, greater attention was paid to main features such as arcades, doors and porches. In the churches, the towers assumed architectural pretensions, and this fidelity for classic detail was carried into the design of pulpits and screens. Investigation shows the extent to which the 1567 edition of *Vitruvius De Architectura* was referred to, especially the woodcut illustrations.

Among the most important of the buildings of the first quarter of the seventeenth century is Hatfield House, built by John Thorpe for the Earl of Salisbury. The central hall and projecting wings form an E-shaped plan, while the formality of the new manner is carried to other entourage, i.e. the layout of the garden. The most important portion of the design is the entrance front over two hundred and thirty-five feet long. The roof is flat, but monotony is avoided and piquancy attained by the design of the graceful cupola at the centre. The elevation has superimposed orders standing on pedestals; emphasis is given to the central motive by a third order and by coupling the columns. This treatment denotes a fashionable tendency which, as previously mentioned, began with the application of the great feature to the façade at Kirby Hall. At Hatfield it is seen at its best. There is also a notable instance of this form of design in the ruined mansion at Houghton, Ampthill, Bedfordshire. In Thorpe's design for Holland House, Kensington, the plan of H formation has its main entrance contrary to

the new manner, that is on one of the side wings. The elevation with its arcaded wings comprises a central feature forming a tower. By comparison with this advanced design, Houghton, Bedfordshire, belongs to the older category of gabled types. Yet all are practically of the same date, namely, 1615-25. Leaving architectural considerations for a moment, it can be stated that at the beginning of the seventeenth century there ensued a marked divergence between the government of France and England, which led to despotic monarchical rule on the other side of the Channel and to civil war in England. Herein is an explanation of the tardy development of the Renaissance in this country. While French art rose to splendour under royal patronage, a similar opportunity was denied to English attainment. The civil wars not only impeded the artistic ambitions of the court of Charles I, but curtailed the pioneer labours of Inigo Jones. The dispersal of the art treasures of the king, including masterpieces of painting and sculpture, is but an indication of the indifference and mistaken zeal of the Parliamentary reformers. The king and his favourites were the only true art lovers. From diaries and guide-books of the period can be gleaned accounts of travel in Italy. The studies of Inigo Jones, no less than the measured drawings made by Peter Paul Rubens of the Genoese palaces, provide the essentials to seventeenth-century mannerism in English classical architecture.

The consequence of all this was that the chief buildings during the reign of Charles I assumed a more classical aspect. Previously the French influence was noticeable, particularly details inspired from designs for Renaissance châteaux. The transition from the picturesque Elizabethan to the symmetry introduced by Inigo Jones—the first English architect to grasp the significance of academic design—was attained in the Banqueting Hall, Whitehall. This fragment, built as an incident in an assemblage of earlier buildings, imparted new life, at a vital stage, to the developing classic school. The building was designed in 1619 and finished three years later, and is chiefly remarkable for the fact that it approached nearer to the matured Italian style than any other building during the whole of the seventeenth century. The impression such a building made on contemporary surveyors, statuary and master masons is only to be judged by study of the lesser works of the period. The elevation, unique in character, must be regarded as a statement of foreign study; its position as an historical exemplar cannot be under-

estimated. The drawings for the complete palace are now known to have been the work of John Webb. The design of the principal front instances a remarkable grasp of composition; the mass of the building is rectangular, crowned by a balustrade. The horizontal subdivisioning consists of three parts. Two parts of almost equal size, comprising the Ionic and composite orders superimposed, stand on a rusticated podium. Vertically the façade is divided into seven bays, the three central ones being distinguished by attached columns, the end bays being regulated by pilasters. At each of the angles coupled pilasters form pylonic masses. The law of contrast is observed in the treatment of the large windows framed by the orders in relation to the small windows in the podium, giving an appearance of strength where it is most demanded. The treatment of the pedimented window heads to the first floor recalls the manner of Raphael, while the upper windows are reminiscent of the style of Peruzzi. The finesse of the detail, the freedom of the carving, the quality of the wall surface rusticated throughout, constitutes the minor differences which are so pleasing. It is, however, in the masterly grouping of the components that the hand of genius is discernible, for this particular combination of the orders and windows produces a three-part composition both vertically and horizontally, with the slightest of projections. The main secret of the design is to be found in the repetition of a unit in itself simple.

In the design of the Queen's House at Greenwich, both plan and elevation show the same regard for the Italian feeling which Inigo Jones had mastered. The simple square plan, which incidentally has no inner circulation—that is to say internal corridors—according to the then prevalent idea, is expressed in elevation by a two-storeyed façade finished with a balustrade. The ground storey is contrasted from the upper one by the quality of its surface texture, the rustications imparting a strong effect. The loggia at the centre, formed by Ionic columns, divides the elevation into a dominant central feature with supporting appendages. In the Piazza, Covent Garden, the design relies on the repetition of the same motif forming the arcade, surrounded by two storeys framed within a grand order, thus producing an harmonious and contrasted ensemble.

From the moment that Inigo Jones finally abandoned Gothic for church design, it followed that respect for classicality should become more profound. At Lincoln's Inn the architect built the famous chapel

with the undercroft after a Perpendicular model. The details show reference to Gothic features from Old St. Paul's Cathedral. In the design for St. Paul's, Covent Garden, an entirely different type was evolved. To a rectangular room was added a tetrastyle portico, the roof of low pitch being carried forward as a pediment. Importance was given to the front elevation by the addition of supporting gateways and an open screen; truly a handsome barn of a new type.

Coleshill in Berkshire, by Sir Roger Pratt, in 1650, is also a fine example of the developing tradition. In all probability the design was inspired by Inigo Jones's Bedford House in London. The plan is a rectangle without appendages. The hall occupies the main axis and contains the great staircase, the lesser apartments are grouped to right and left of the central parlour. In the placing of the central corridor which runs parallel to the front elevation inheres the germ of the newer system of internal circulation, which is to be developed much later and will result in greater freedom of planning.

To simplicity of plan ensued simplicity of statement in elevation. The windows rhythmically grouped and balanced on either side of the main centre produced an effective pattern without the intervention of columns, pilasters or other projections. Inigo Jones had first grasped the potentialities of Palladio's designs during his visits to Italy, and in the course of his career as an architect he had succeeded in imposing the Palladian formula upon the native tradition. His followers, and especially his henchman John Webb, extended the manner in which the master had proved so proficient. The position of Sir Roger Pratt as an amateur architect, on the other hand, furnishes evidence of detached action sympathetic to current tendencies. Mention has been made previously of the drawings of Genoese palaces published by Rubens. The Genoese character of certain English buildings of the seventeenth century cannot be disregarded, although the exact authorship is difficult to locate. In this group must be included the following: Furnivall's Inn, Holborn; Cromwell House, Highgate; a large house at Beaconsfield; Tyttenhanger, Herts; Craven House, Drury Lane; Walden House, Huntingdon; and Thorpe Hall, Peterborough, the latter definitely the work of John Webb. As often occurs in the conception of design, considerations other than pure logic frequently come into play. While it can be conceded that direct contact with acknowledged masterpieces helped, it was equally true that published illustrations of contemporary buildings,

THE RENAISSANCE IN EUROPE

as, for example, the palaces of Genoa, no less than the influence of minor ornamental details from many different sources, contributed to form the classical manner of architecture during the reign of Charles I. While in England, through Inigo Jones, the rules promulgated by Palladio were adopted, the architects of France set greater value on the teachings of Vignola. This is a valuable and interesting point, because in the succeeding centuries no drastic departure from these rulings was allowed in either country. Reference to existing documents regarding the aspect of the façades of timbered and plastered houses built in London prior to the Great Fire of 1666, shows the extent to which the details of the later Renaissance had become part of the ordinary manner of expression. Under the Revolutionary Government of Cromwell's party it is not surprising to find general decay in the arts. While England was in the toils of military and political unrest, Holland was advancing in trade and maritime power. In architecture she had developed a tradition of well-proportioned brick houses, many of which formed the basis of Vingboon's designs. It was not unusual for English political refugees to make their way to Holland. Amsterdam was a recognized centre for the publication of books on art and science, and so was Antwerp. It became natural that with the restoration of the monarchy in 1660 Dutch ideas were accepted in a country eager for innovation and recovery. Once again the importance of foreign intercourse in art is demonstrated.

THE LATER DEVELOPMENT IN THE SEVENTEENTH CENTURY

The measure of the architecture of the second half of the seventeenth century demands wide knowledge. There is the importance of the contribution as a whole as well as the splendour of its masterpieces. There is need to study causes due to the period itself: the true estimate of foreign influences, their benefits and retarding effects. There is need to show the joint action of inherent development and the new spirit accorded to art by emulation of foreign models. It becomes essential to analyse the period as well as individual achievements in the art of building. The totality of the specialized work of any period is only to be understood in this manner. It will be admitted that the period which witnessed the rebuilding of the City of London not only represents the beginning of a new attitude towards architecture, but laid the foundation of the academic

manner for a diversity of buildings. This is to say nothing of the number or quality of the works, the encouragement of the arts and crafts ancillary to them, or the ultimate raising of English architecture to a high place in the public estimation. The insular character of England, the peculiar temperament of the people, the political machinery invented from time to time to meet particular needs, the formation of laws favouring religious toleration, constitute factors which were bound to affect the art of the country. Without contact with the Continent of Europe advance in the academic art would have been impossible. After the Restoration of Charles II it was natural that the Court should be influenced from France; it is also significant that the intellectual classes and the merchants were drawn more to Holland. But it was the native strength of character, the product of centuries, that expressed itself in buildings despite the veneer of classical detail. With the exception of Wren's visit to Paris, Marot's work in England for William III and the publication of a few translations of contemporary French books on architecture, there is little evidence that anything absolutely essential was borrowed from the French. A relative study of French and English architecture of the period 1660-1714 must favour the more polished condition of the arts in France. The building of the great palace at Versailles had stimulated architects to appreciate the grand manner. The principle of patronage and protection for the arts had been demonstrated in the founding of schools and academies.

In England patronage of the arts was bestowed by Court, Church and City. Individual works on the scale of Versailles were not countenanced for the amusement of English monarchs. During the period of more than half a century which comprises the reigns of Charles II and the first of the Georges, the rebuilding of the City of London, including the great metropolitan cathedral, the City churches and public offices, rank of even greater importance than the private building enterprise of the French king. When it is realized that the hospitals of Greenwich and Chelsea, the palace at Hampton Court and many large mansions belong to this period, the vast extent of the works is surprising. For these buildings in particular show how the diverse influences were combined.

The architectural contribution of the period therefore constitutes a totality of knowledge of the art then available. There remains an investigation of the methods employed by the architects to produce such fine results and a discussion of the principles which guided them.

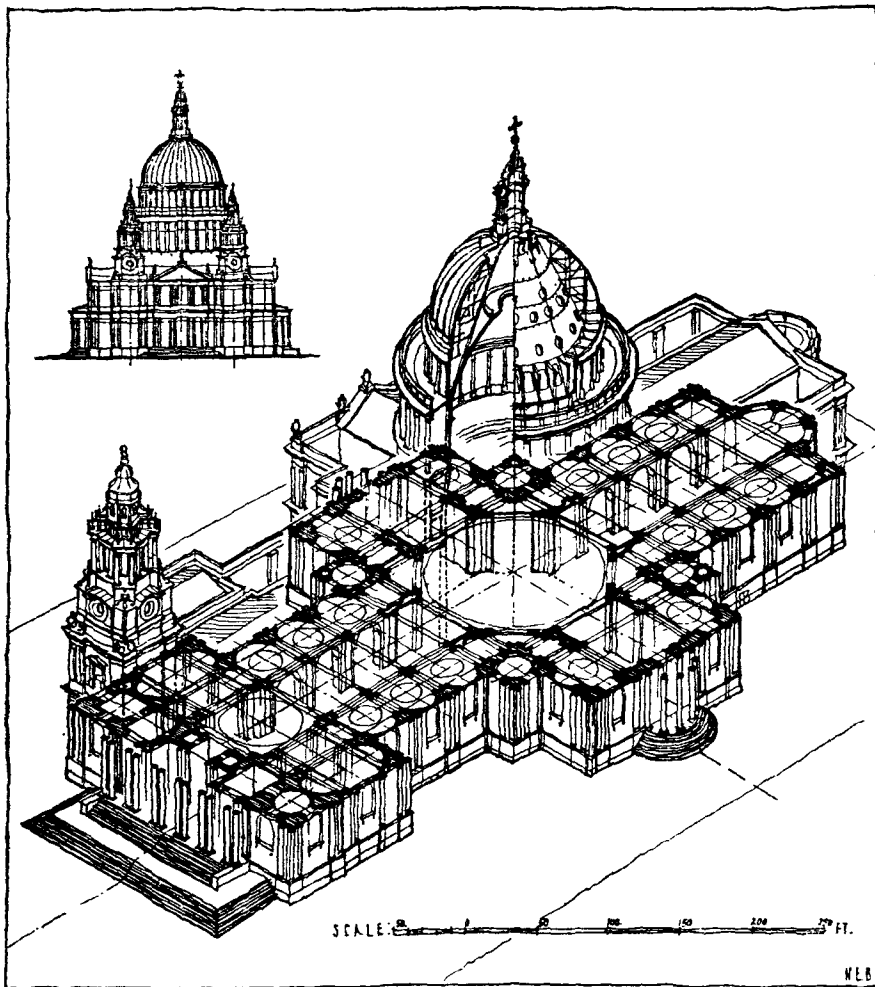
It must be borne in mind constantly that the buildings of any period are the effect of the social conditions of that time. In the late seventeenth century the chief factor was reaction from Puritan restraint, which in turn gave increased power to the Church. The absolutism of the French monarchy also was not without effect on the Stuart Court. Commercial rivalry with Holland prepared the way first for war with the Dutch and then for ultimate alliance with them against the might of France. The great circumstance, however, which changed affairs in architecture was the Fire of London, following closely on the Plague, and the subsequent rebuilding of the greater part of the ruined city. It is evident that this combination of causes, coinciding with the advent of a genius of the calibre of Wren, who enjoyed the confidence of the ruling authorities, was extremely beneficial to the art of architecture. Another point is that the traditions of the various crafts associated with building were not only actively pursued, but the way had been prepared by Inigo Jones and his contemporaries for a fuller acceptance of classical architecture by craftsmen. Among the wealthy, foreign travel was on the increase; once again there was a love for fine pictures and rich furniture. Further change came with the revocation of the Edict of Nantes in 1685, and the settling in England of thousands of skilled Huguenot artisans who brought their own trade secrets and skill to bear on English productions.

The religious disputes which led to oppressions in France and to toleration in England provide the most marked symptoms of the period. The mistaken zeal which partially deprived France of a large and important section of her population cost James II his throne. Under William III and Mary the Protestant Church was not only stabilized as something national, but religious freedom was assured to Dissenters. Political freedom in like manner emerged from the welter of conflicting factions and painful memories. All these events were not without effect on the architecture.

The last phase of the seventeenth century, therefore, witnessed the realization of many different ideals which nevertheless were peculiarly insular. Apart from the classicity of the architecture of the late Stuart period, which was largely incidental, there was the fact of progression and encouragement which affected all classes of the community at large. The genius of Wren (1630-1723) seems to express the whole spirit of the times. At an early age he was famous for his scientific attainments, but

when he discovered his own powers as an architect, largely through his command of geometry, he sought to widen his skill by adding artistry to plain structural statement. In the treatment of his churches, the congregational plan is dominant. Herein is to be seen an architectural statement of the ecclesiastical tendency of the period which placed the sermon first in religious observance. The appropriate treatment of plans and sites for churches and towers seems to have been dictated by building on the old sites and in some cases by the necessity to re-use existing walls and foundations. Wren's power of geometry stood him to full advantage in planning St. Stephen's, Walbrook; the small church of St. Benet's, Paul's Wharf; St. Swithin's, Cannon Street; St. James's, Piccadilly, and St. Mildred's, Bread Street. From the Dutch he borrowed the theory of combining stone with brickwork. From the French the theory of uniformity and balance in great compositions. From the Italians was garnered the great scale of the cupola of St. Paul's, and the elegant silhouettes of the contrasting campanili. Wren's steeples were mainly of his own devisement after study of steeple designs by Cornelius Danckerts, the main theme in this regard consisting of superimposed elements forming various stages in the design, as at St. Bride's, Fleet Street, and St. Mary le Bow, or plain conical designs following the Gothic prototype, as at St. Margaret, Pattens. Wren continually achieved a mastery of plastic forms and contrived new features with variety and effect.

In the work of Sir Christopher Wren the true lessons of the Italian Renaissance are brought to fulfilment. The plasticity of the classic theme is demonstrated, the cupola is adapted for internal and external effects, and a new system of saucer vaulting invented. In the application of superimposed orders to the exterior of St. Paul's is to be seen the intellectual superiority of the great designer who regards the treatment of wall surfaces as preludes to the drum and the peristyle of the gigantic cupola, which floats so majestically as the "dome of London." In the treatment of elevations harmony of parts contrasts with the rhythmic repetition of submotifs, finesse in the profile of components, elegance in the design of mouldings; such qualities portray the ideal of classical learning. It should not be forgotten that half a century separates the age of Inigo Jones from that of the time of Wren's triumph, namely, the completion of the metropolitan cathedral. In his monumental work Wren subordinated the theory of structural integrity to the satisfying of



ENGLISH RENAISSANCE

ST. PAUL'S CATHEDRAL, LONDON

(SIR CHRISTOPHER WREN, *Architect*)

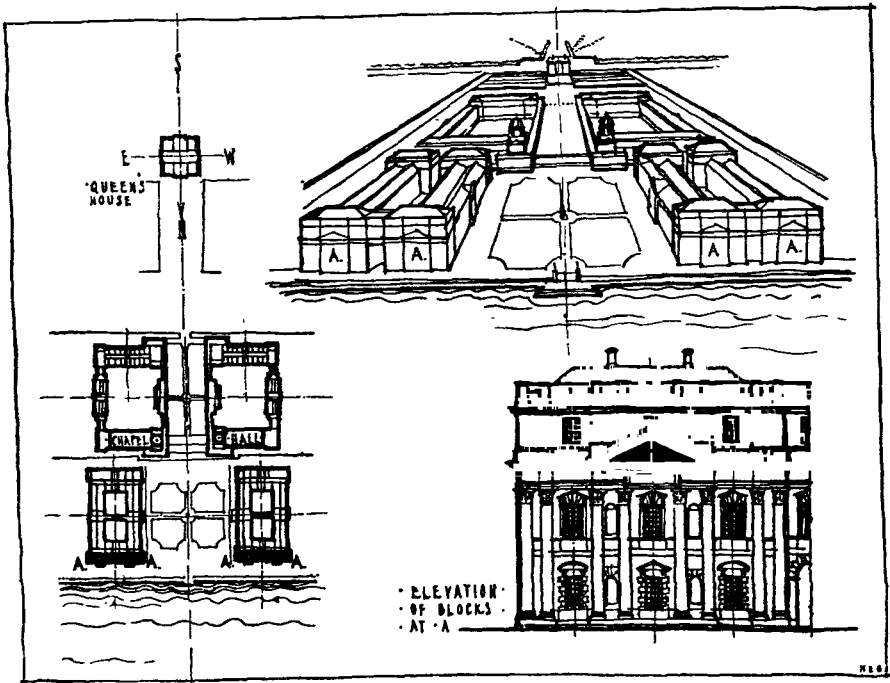
The ultimate development of the three-part dome based upon the Latin plan. The studied silhouette embraces all known themes of the Renaissance masterly grouping of features, both horizontally and vertically.

æsthetic considerations. For example, the internal effect of the dome at St. Paul's; the transepts, nave, choir and aisles do not reveal the external subterfuges of masked structure. The proportioning of the part of the

THE ART OF ARCHITECTURE

western façade and the treatment of the north and south transepts is superb. The principles of planning followed by Wren were largely dictated by circumstances.

- (a) The demand for a plan on the Gothic model.
- (b) The necessity of conforming to the classic manner in the elevations.
- (c) The devisement of geometric structure which should be as nearly



ENGLISH RENAISSANCE

GREENWICH HOSPITAL

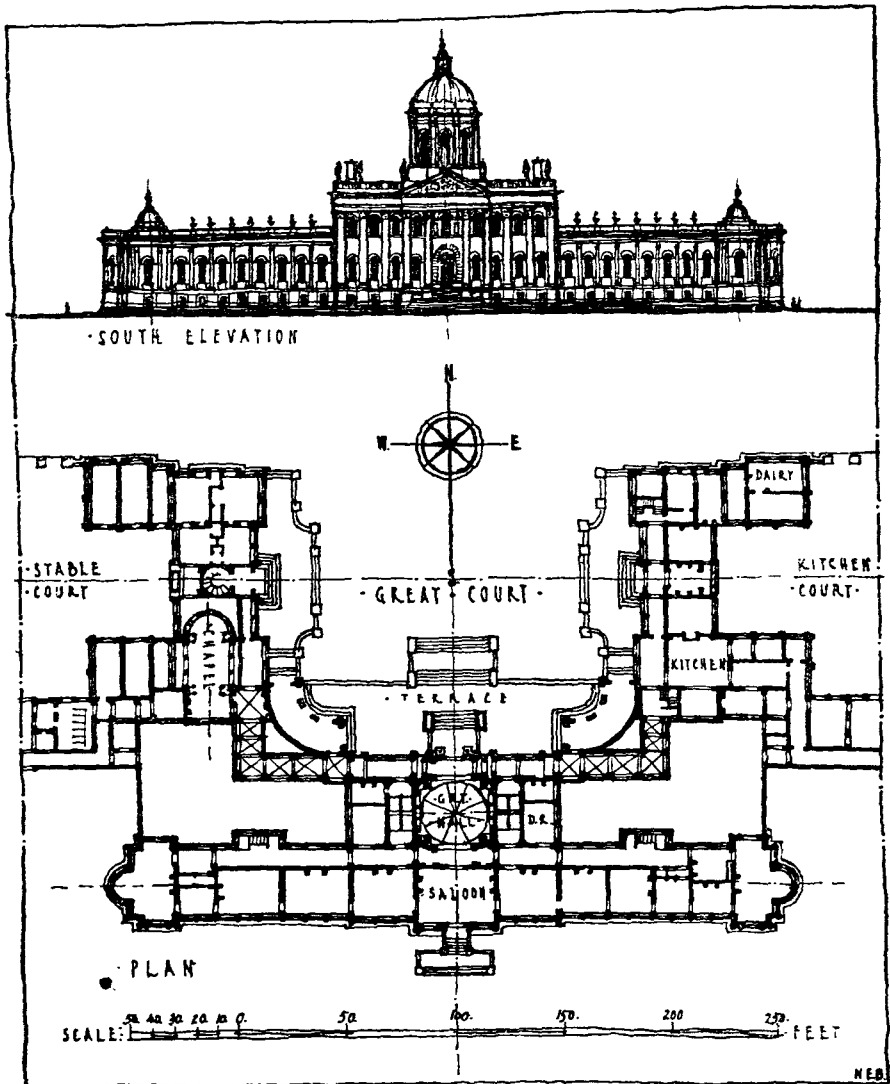
The avenue plan of the open axis style. A novel composition emphasized by twin cupolas.

perfect in harmonious sequence as mathematical skill could ensure. This ambitious result could only be achieved by trial. No other method was available save that which the architect invented to meet these special contingencies. Wren by his genius lifted English architecture of the seventeenth century to the heights of Olympus, destined not only to promote but to overshadow the brilliance of the finest works of architecture produced during the ensuing eighteenth century.

Wren's powers as an organizer can be seen in the design of Greenwich and Chelsea Hospitals, buildings of unique composition and inherently simple in mass and detail. The grasp of scale shown in the river front of Trinity College Library, Cambridge, is echoed in the masterly treatment of the Middle Temple gateway. The great architect's descent to simple problems is evidenced in the Chapter House, St. Paul's, and the brick terrace formations of the Temple. At Hampton Court, Wren attempted a Royal palace actually of greater scale than Versailles, but the exigencies of the site, no less than the incorporation of Wolsey's buildings, were important factors in the ultimate result. There can be no doubt that Wren's various schemes for rebuilding St. Paul's were inspired by the plan of St. Peter's at Rome. His favourite scheme was the radiate or Greek cross plan which gave dominance to the cupola. In another version of this plan the concave angles, no less than the domed vestibule, show true inspiration, whatever the original motif.¹ The plan of St. Paul's in its final form exactly responds to the demands of the clergy and the Romanish ideas of the Duke of York. It shows the compromise effected between Gothic and Classic principles. St. Peter's, Rome, is faintly recalled in the treatment of the cupola, while the fashion of the Baroque is revealed in the twin western towers which acknowledge the taste of Borromini. Wren was incomparable in his skilful adjustment of factors of design. He maintained his position as the leading English architect during four reigns. Not the least of his valued contributions were definite rules for the construction of buildings; these at a later date were incorporated in the earliest of the London Building Acts. These rules were confined to the thickness of walls, heights of rooms and the nature of materials. The effect can be seen in the elevations of the eighteenth-century houses. Wren attained mastery of classical detail and the application of geometry to buildings by practical experiments, as occasion arose.

Not only did Wren exhibit genius in his handling of the many buildings he was commissioned to erect, but he had the power to inspire a school of followers, chief among these men being his domestic clerk and pupil, Nicholas Hawksmoor (1661-1736). This architect showed great originality in the design of his churches: St. Mary, Woolnoth; Christ Church, Spitalfields; St. George's in the East and St. George's, Blooms-

¹ It is conjectured that an illustration of a plan by Antoine Lepautre formed the basis of this ambitious project.



ENGLISH RENAISSANCE

CASTLE HOWARD

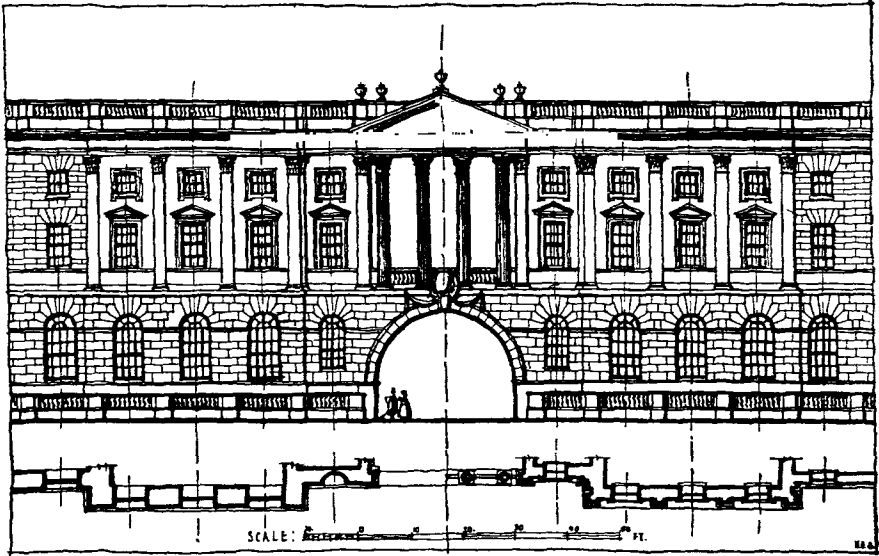
(SIR JOHN VANBRUGH, *Architect*)

A plan with a Court of Honour after the French manner. The elevation shows regard for pyramidal grouping.

bury. In the west front of St. Mary's, Woolnoth, is to be seen a four-storeyed composition forming a tower; the fourth storey, however, is schemed as a twin element, thereby terminating the composition in a lighter manner. The design of the west front of Christ Church, Spitalfields, also embodies a tower, which, however, is terminated by a pyramidal obelisk. The affinity between the two designs, as in all storeyed compositions, is maintained by a dominant vertical element. The deduction to be made is that in storeyed compositions either all the divisions can be made equal or one element may be predominant. In addition, the observance of the principle of a tapered silhouette is essential. The ill-effect of a tower without an entasis is to be seen in the Victoria Tower at Westminster, where the upper part appears wider than the base. It is significant that from the earliest times these principles were observed. It is a well-known fact that in all branches of analytical study the main objective is to discover the exact reason and method which constitute the laws forming a proved system. It would be beside the point to recount the whole list of architects who contributed so much to the excellence of the art of building in the eighteenth century. Wren had demonstrated the plasticity of the Baroque manner then common to Western Europe. In this he was seconded by Vanbrugh, whose opportunity to design such buildings as Blenheim, Castle Howard, Seaton Delaval, and the Gun Wharf at Plymouth Dock, called for vast picturesque groupings of cupolas, pediments and chimney stacks unified by the running theme of rusticated masonry. To these very successful experiments in grouping must be added two works by James Gibbs, namely, the Radcliffe Library, Oxford, and the Senate House, Cambridge. The advent of the amateur architect coincided with the renewed interest in classicality which, after the year 1730, centred on a close study of Roman monuments. This peculiarly English phase of the Renaissance led to avoidance of contemporary French forms and the substitution of a restrained manner for the unified elevations. In the works of the Woods of Bath, particularly the stately streets, crescents, and formal layouts, acceptance of the Academic system is seen *ab initio*. Later in the century the Brothers Adam pursued the same methods at Edinburgh and in London. But the most able exponent of the classical manner was Sir William Chambers, whose monumental group of buildings, Somerset House, sums up the whole spirit of eighteenth-century ideals. The real key, therefore, to an understanding of the architecture of this period is to be found not in

the natural outcome of planning necessities, but in the predetermined imposition of precise taste.

To these generalizations can be added the interest in classic Greek architecture, which began with the founding of the Society of Dilettanti and received impetus at the hands of Stuart and Revett. The state of culture at the time admitted a general acceptance of Roman models, but



ENGLISH RENAISSANCE

SOMERSET HOUSE, LONDON

(SIR WILLIAM CHAMBERS, *Architect*)

A façade showing the influence of Palladian and French architecture. Effect is obtained by opposition of forms of fenestration expressing floors. Dominance is given to the upper part by the introduction of the Corinthian order embracing two floors.

taste was not ripe for the full cycle of the Greek Revival. The most remarkable factor concerned with the art of the time was the universality of the classic theme, encouraged by the cultured classes, which appears to have penetrated every branch of design. When, after the Napoleonic Wars, the English people became more democratic, countless revivals and imitations of historic styles followed the breaking down of class barriers.

Praise is due to the eighteenth-century architects for their scholarship, knowledge of materials, sense of decoration and the organization of the

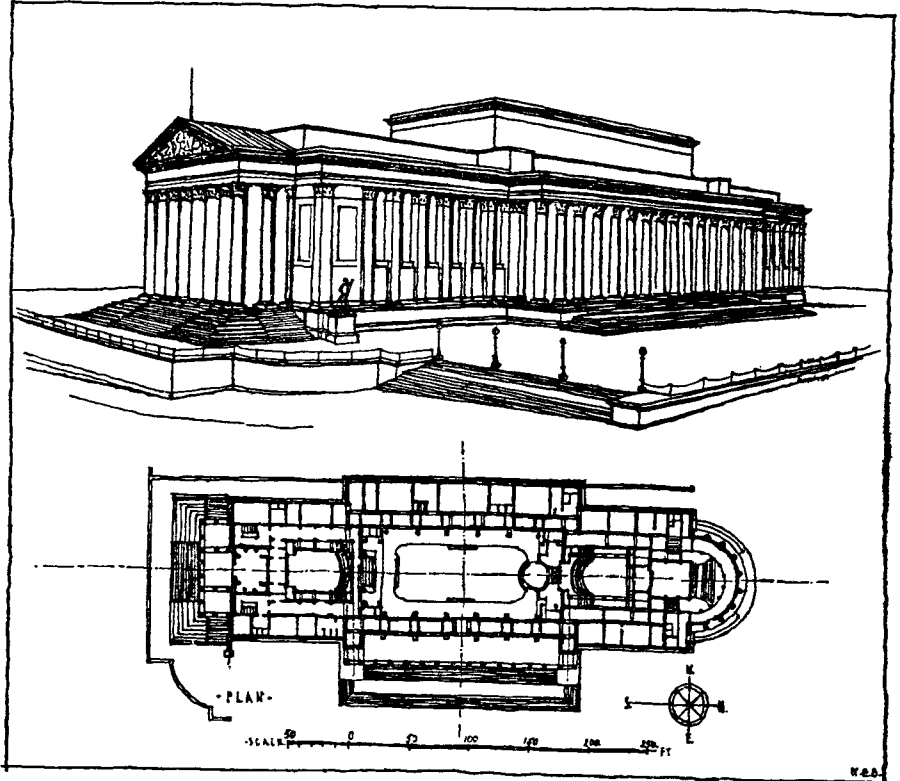
crafts. From such deductions we arrive at general conclusions and trace the whole gamut of an architectural movement. This is the surest method to arrive at an understanding of directing principles. The desire to excel the architects of antiquity, first Roman and then Greek, is indicative of a psychological urge to attain similar superiority. While under this process the works of real art are limited, scope for genius is also possible. This is to be seen in the design of Newgate by the younger Dance. The most original mind, however, that resulted from the fusion of Roman and Greek study in architecture was that of Sir John Soane. This architect's treatment of the screen wall to the Bank of England proves him to have possessed a dramatic sense of architectural composition. In this case the problem was to devise a screen wall masking a number of internal courts and halls. The completed building, in purpose a national treasury, was a contribution to character dramatization in architecture. The chief exponent of the Greek manner was William Wilkins, whose design for University College, London, created a precedent for the Old General Post Office and the screen of columns forming the main façade of the British Museum by Sir Robert Smirke. These works initiated a series of monumental buildings, such as the Fitzwilliam Museum, Cambridge, by Basevi, and the banks designed by Professor Cockerell.

The monumental building of the Greek revival *par excellence* is St. George's Hall at Liverpool, which was designed by Harvey Lonsdale Elmes and completed by Professor C. R. Cockerell. The main conception of the building combines features of Greek and Roman architecture with the simplicity of Egyptian massing. The interior is grand in scale, and the ensemble both externally and internally proves that grandeur of effect was the aim of the architect. How this result was obtained is explained by the selection of a dominant theme, namely, the Corinthian order and the continuance of this ordonnance on all elevations. Skill is evidenced in the arrangement of the individual groups of columns, pylons and dwarf screen walls. Variety of silhouette is imparted to this extremely simple composition by raising the four main walls of the central hall in the form of an attic. Here is a building worthy of the Wren manner, and as fittingly terminating the great tradition of classicality which Wren and his school had fostered.

While at this juncture one division of English architects attempted to correlate the classical theme to the needs of the day, another division

THE ART OF ARCHITECTURE

preached the return to Gothic principles as being more suited to the traditions and climate of England. The first steps towards popularizing mediævalism had been taken in the middle of the eighteenth century. By a process of selection and experiment there grew up, first an apprecia-



ENGLISH RENAISSANCE

THE CLASSICAL REVIVAL, NINETEENTH CENTURY

ST. GEORGE'S HALL, LIVERPOOL

(HENRY LONSDALE ELMES, *Architect*)

A design showing unification of a three-part composition by the rhythmic repetition of the vertical element, the columns.

tion of Perpendicular architecture, and lastly a very real understanding of the whole range of Gothic architecture in England. At the same time, attention was drawn to the masterpieces of French Gothic by the scientific researches of Viollet-le-Duc. The finest modern Gothic building in the

world, the Houses of Parliament, was the outcome of the opposing clashes of opinion which wavered between Gothic and Classic. In the first place, the style of the building was dictated to the architect, mainly for historical interest. Secondly, the architect himself was a classicist and could not avoid following classical principles of planning. Pugin, Barry's collaborator in the fulfilment of the building, remarked, "Gothic details on a Classic body," and this aptly describes the fusion in one building of two revivals diametrically opposed. The success of this building inheres not so much in the pictorial grouping, admittedly fine, as in the masterly handling of the plan. This plan proves Barry to have been endowed with an intuition for mastering a complicated problem and at the same time to have been an architect of great originality. The novel arrangement of the Houses of Parliament constitutes a planning theme which has been taken again and again for buildings of similar character. To quote an example, the plan of the Parliament House at Budapest is similar to that of Westminster.

The greatness of the building is due to Barry, who controlled the repetition of the Gothic detail which forms a minor attribute of the design. The introduction of the Victoria Tower and Clock Tower, as well as intermediate tourelles, breaks the monotony of the external silhouette and calls attention to the vastness of the whole group. The Gothic revival was begun in a tentative way; it was destined to be the vehicle of an extraordinary ecclesiastical revival which brought about the construction of many churches imitating those of the Middle Ages in England and France, and certainly the most harmful restoration of many fine cathedrals. The leading exponents were Pugin, whose works were of great influence, Street, the architect of the Law Courts, and William Butterfield. From 1870 until the beginning of the twentieth century the period was one of many minor revivals and incoherent fashions. This period, however, prepared the way for a fuller understanding of domestic architecture. The emancipation from intellectualism and style tyranny was now in sight.

Chapter 5

ARCHITECTURE IN SCANDINAVIAN COUNTRIES AND RUSSIA, SIXTEENTH TO NINETEENTH CENTURIES

DENMARK

THE CONSIDERATION OF THE subject reveals a marked analogy between the architectural manner of Denmark and that of other North European countries during four centuries. In Denmark a long sequence of events, Pagan, Early Christian and Mediæval, had given scope for the formation of national characteristics. The nature of the soil, on the one hand, had encouraged the peaceful development of agriculture, while the proximity of Norway, Sweden, Germany and Holland, no less than intercourse with England, led to maritime enterprise. The results were beneficial to the growth of Denmark as an independent state with a high position in the councils of Europe. A pioneer in matters of freedom and reform, Denmark proved a force in political and educational affairs. The arts and sciences were advanced as rapidly as was the case in Holland and France. Apart from the effects of war treaties which have militated against the State, the story of Denmark from the Reformation to the present day is one of continuous progress. What might be called the first legitimate phases of the national architecture date from the time of Christian IV, 1588–1648, who is said to have possessed architectural skill. In this reign was built the great copper-roofed palace of Rosenbourg, attributed to Inigo Jones; the Frederiksborg Palace at Copenhagen resembles Heriot's Hospital at Edinburgh. The more important architecture of Denmark, therefore, in its early classic stages, is not far removed from the style of the Renaissance as modified in the Netherlands and in England at a similar date.

During the later years of the seventeenth century both Dutch and French buildings were used as models. For example, the four great gates of the city of Copenhagen were without doubt inspired by designs of the ubiquitous French architects. Further impetus to the art was given in the year 1728, when two-thirds of the city of Copenhagen suffered destruction by fire. Many of the fine palaces, and town mansions, built of brick and of Norwegian granite, were erected between 1730-90. The consequence of all this was that the streets of the city assumed a more academic aspect. They became, with the newly planned public centres, of an importance almost equal to the town planning of Bath.

It is therefore important to realize that the taste and culture of this enlightened people should have been well advanced. During the eighteenth century scope was given for the designs of churches, markets, schools, theatres and prisons. From the free Netherlandish transcriptions of the classic ensued admiration for the restrained brick façades and modest embellishments of high Dutch architecture. Then followed the academic phase which favoured Palladian themes, the result being that at the close of the eighteenth century Danish architects were ready to interpret the neo-Greek movement which accorded so exactly with the views of Thorwaldsen. The simple fact of all this was that the Danes were in a position to profit by the authoritative art of neighbouring states. The material resources of the country, no less than the climate, determined the traditional forms of construction, namely, brick, timber, granite, tiles and copper, materials universally employed for cottages, palaces or monumental buildings. But it was not until the eighteenth century that architectural composition on the grand scale became an ideal.

Hence it occurred that the minds of the Danish architects, being open to ideas, conceived buildings of quiet charm and scholarly dignity. The architecture of Denmark is neither opulent nor ambitious. It touches partly on the character of contemporary work in Sweden and is partly reminiscent of the buildings of similar date in North Germany. In the development of small houses and street façades there appears to have arisen something akin to the homely charm of similar works in England.

Examining the façades of domestic buildings of the early period, the windows are of the transome and mullion type in wood, the only break in the elevation being the main doorway, often augmented by a gabled dormer embracing two storeys built in the front wall. The development of the mullioned windows into horizontally glazed surfaces, inspired by

Gothic construction, may be seen at the Schloss Sorgefrei. In this building all the elements of the pyramidal form of composition are to be found, including the central pavilion crowned by a pediment, the whole frontispiece often being terminated by an elegant cupola. One of the earliest classic compositions is that of the Frederiksbourg Palace, built in 1725. The theme of the Court of Honour, with buildings on either side, and an open approach without a screen or gateway, allows the whole pictorial effect to come into instant view. The skyline is broken by the imposing domical roof, lantern cupola and supporting chimney stacks. Later examples of the Palladian style introduce an ordonnance similar to the Handels Bank or the Classenske Fidecommis. These two façades echo similar treatments to those found at the time in every European city.

Among other interesting buildings, the Asiatische Gessellschaft and the Chirurgische Akademie, both built in the late eighteenth century, embody the principles of triangular composition in the façades. A picturesque note is added by the treatment of the steep-pitched mansard type of roof with the characteristic lead verges and finishings. The quality of vistas in street architecture is not forgotten, as in the case of the Dronningensgade with the Erloserkirche, resembling the tower and spire of St. Martin-in-the-Fields, London. On one side of the street is the twin group of the Asiatische Gessellschaft linked by an archway.

French architecture of the period of Napoleon is seen in the design of the Alte Rathaus, with its plain austere wall surfaces relieved by simple windows.

The certainty and precision which accompanied Danish architectural design from the eighteenth to the first quarter of the nineteenth century has since been continued down to modern times. Such fine designs as the Police Headquarters at Copenhagen, or the Oregard College, show the intimate connection between the old and the new. In the small houses and groups of cottages, no less than in the composition of tenement buildings and schools, observance of traditional features is customary; climatic and local conditions are never overlooked.

RUSSIA

The early development of civilization in Russia was not productive of a permanent architecture. The reason for this is twofold, for not only were the people inept in the arts, but Continental invasions

by successive waves of Germans, Poles and Lithuanians from the West, and Mongols and Tartars from the East, retarded the founding of a style. It was not until the proclamation by Vladimar in A.D. 988, establishing Christianity as the official religion, that churches, convents and monasteries, inspired by those of Byzantium, and in most cases designed by Greek architects, were built. The earliest churches were based on the basilican plan, incorporating the dome as a feature. The Church of St. Sophia at Kiev, built in A.D. 1030, and the Cathedral of the Assumption at Moscow, built in 1328-41, can be cited as early types. From these works arose plans similar to that of the cathedral of Vassili Blanskenoy at Moscow. The external treatment in this case consists of several towers each capped with bulbous ogival tops, centred around a central tower finished with a conical steeple. This arrangement was connected with the timber tradition of Asiatic building, which remained unchanged for centuries. While the wooded regions of Russia, especially in the centre and the south, inspired the use of timber for buildings, the history of the early Russian style begins with influences from Armenia and Constantinople, the main development being by way of Cherson and Kiev to Moscow. In course of time brick, and stone of small dimensions, became part of the building system. The development of brick towers and domes in the form of vertical cylinders was due entirely to Eastern influences. The most favoured theme was the octagonal dome in which a series of arches in "trompe" fashion constitutes the method of reducing the first stages of the dome cylinder prior to its final covering in timber. The curious bulbous shapes given to terminating octagonal features indicate Tartar origin and contact with the East. The absence of extensive fenestration in the lower walls of large churches led to the development of natural lighting from the region of the central dome. This singularity was not without its effect on the treatment of the exterior walls, which in many cases follow the Armenian system of delicate strip projections and slight arches. The pronounced verticality of these designs becomes characteristic, while the towers in some instances have the character associated with the slenderness of the minaret.

The early domestic architecture of Russia belongs to another category. Here timber construction brought the steep roof into prominence. We must also recognize the demands of climatic conditions. As there was a plenitude of timber and the population was scattered in villages and small towns, the log-built house was general and the traditional types were

continued for many centuries. The wide eaves, the balcony at the first-floor level and the small shuttered windows, no less than the huge chimney, testify to the need for protection against excessive variations of climate. The older town houses, also of timber, such as were destroyed by the Great Fire of Moscow in 1812, were more elaborate in their external treatments. The predominance of roofs proclaimed the pavilion character of the various apartments combined in one ensemble. The projections of bays, loggias and porticoes, as well as of covered external staircases, are typical of those fantastic designs which owed no allegiance to European custom. Mention must be made of the bell towers for which ancient Russian architecture has long been famous. One of the finest was that of Ivan Veliki, erected by the Czar Boris about the year 1600. This rectangular tower rose boldly from the ground as an octagon and then developed into three stages, a cylinder and the usual bulbous dome finished with a cross. This tower was destroyed by the army of Napoleon.

The Tower of Boris, forming part of the Kremlin at Moscow, consists of four rectangular stages, including the main work terminated by an octagonal spire of Gothic character. The military works with their battlemented walls and projecting towers and escarpments were sometimes relieved by magnificently proportioned gateways. The sacred gate to the Kremlin, for example, fulfils all the conditions of ordered architectural composition. In old Russia every city had its sacred entrance to record some important historical event or some miracle which happened in the locality. While Russian architecture of this early period can show nothing profound in the designs of cathedrals, churches or public buildings, the development of interior decoration is also deserving of notice. The interiors of the great churches were used for the display of portraits of saints and for pictorial representations and colour which almost entirely superseded carving. The great feature was the iconostasis or image bearer, a type of rood screen. Few buildings in the history of architecture have aroused more curiosity than those described in this section, yet none is more uniformly uninteresting as a subject of design.

THE CLASSICAL RENAISSANCE IN RUSSIA

It may be supposed that those vast buildings which form conspicuous monuments in the history of Russian art are not indigenous to the

country, and therefore have no place in the true sequence of architectural development. This is only partially true, for although the buildings themselves were designed by architects from other lands, the conditions under which they were built entitle them to be classed as Russian.

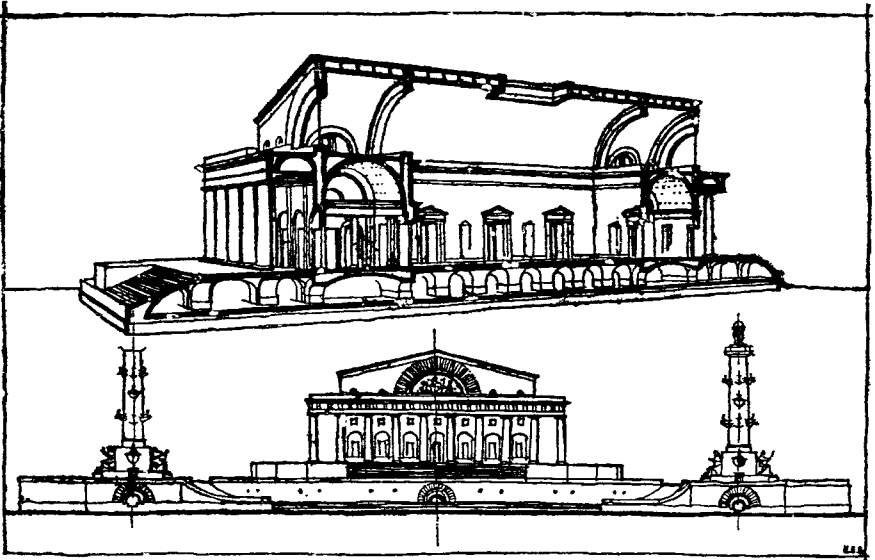
The Renaissance in Russia can be attributed to the desire of Peter the Great to westernize his country. He introduced English and Dutch artificers and skilled workmen to build his new city and proposed to start a colony of French artists there. The foundation of St. Petersburg in 1703 thus marks the date of Russian entry as a neighbouring State in Western Europe.

The bold spirit of Russia's new master was bound to influence those who followed. During the eighteenth century new palace succeeded palace at close intervals, together with works of public importance, and lastly organized schemes of town planning. The classical architecture in Russia is divided into four periods. The first, that of Peter the Great, 1689 to 1725, connotes the early influence of classic art and the founding of St. Petersburg. The plan by John Baptist Homann of Nuremberg is the first document dealing with the planning arrangements of the city. At this time designs were made by Zemzoff in the manner of the Italian Baroque. Greater interest attaches to the designs by Le Blond, a French architect who worked in the style of Mansart. Le Blond before leaving for Russia had been engaged on a treatise on architectural decoration in collaboration with Mariette, who was responsible for the text, the plates being the work of Le Blond, which are still to be found in the State archives. Through Koroboff, an architect who had studied in Holland, some Dutch influence resulted, but the main stream of classicism came from France and Italy. The period of the Empress Elizabeth I witnessed the rise of the Italian school under the direction of Carlo Rastrelli. This architect designed the palace of Tsarko Selo, with a frontage of 1,200 feet, and the first palaces at Strelna and Peterhof. In 1754 he built the large Winter Palace and became professor in the Academy of Fine Arts. Many Russian architects followed the lead already given and sought to adopt the academic aspect of the Italian Baroque to the developing spirit of Russian architecture.

The period of Catherine the Great, which followed, must be read as a chapter detached from the history of French art. Vallin de Lamotte built in the style of Louis XV and XVI, with a most delicate taste and

regard for completeness, the little palace of L'Hermitage and the palace of the Duke of Oldenbourg, as well as the palace of the Academy of Fine Arts.

De Wailly, the designer of the Odeon and the Grand Theatre at Brussels, founded in Russia a school of architecture. It happened that the artistic education of Russian architects was entirely based on



RUSSIAN ARCHITECTURE, EIGHTEENTH CENTURY

THE BOURSE, LENINGRAD (ST. PETERSBURG)

(THOMAS DE THOMON, *Architect*)

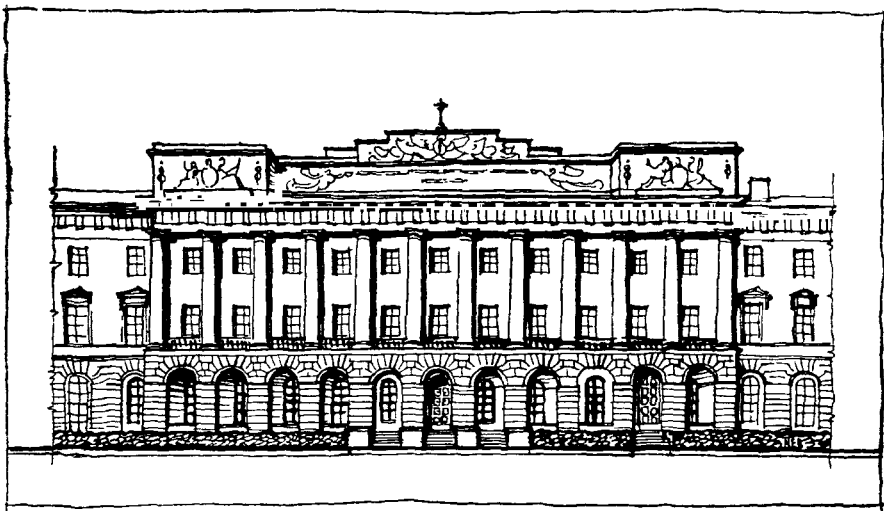
The adaptation of a contemporary French theme. The triangular formation at the front is dictated by the dominant vault of the interior. The vertical columns are submotif forming twin contrast to the central mass, at the same time enlarging the perspective of the ensemble.

Western principles. Among the Englishmen who were commissioned to design great buildings was Felton, architect of the Grand Hermitage, and among the Scotchmen Charles Cameron, whose name is associated with the design and decoration of palaces and mansions.

The influence of the Italian Quarenghi must not be disregarded. Many of his exquisite drawings are preserved in various collections in both Russia and England. The period of Paul I, and Alexander I, marks

ARCHITECTURE IN SCANDINAVIAN COUNTRIES AND RUSSIA

the zenith of the neo-Classical movement in Russia. Then was witnessed the full development of French influence, and in the works of Zakharoff and Thomas de Thomon at St. Petersburg (Leningrad) is to be seen the triumph of the classical viewpoint. Zakharoff's masterpiece, the Admiralty, with its vast frontage and masterly treatment of the central feature, is unique. The Bourse, by Thomas de Thomon, reflects the original handling of detail which made the fame of Le Doux. In this



RUSSIAN ARCHITECTURE, EIGHTEENTH CENTURY

BARRACKS OF THE PAVLOVSKY REGIMENT (ST. PETERSBURG)

An adaptation of a French theme of the period of the Empire. The treatment of the attic, while giving additional interest, is not in sympathy with the unbroken ordonnance below.

design the composition consists of three blocks of buildings, the central position being occupied by the Exchange. The treatment of the river frontage, with twin rostral columns and double flights of steps leading down into the waters of the Neva, far excels anything of a similar character in Europe. Thomas de Thomon was the first architect in Russia to renounce the usual exemplars of the Renaissance; the full effect of this procedure can be seen in this convincing group, which is entitled to a high place in the history of eighteenth-century architecture.

The country mansions built in the eighteenth and nineteenth centuries

reflect the taste and culture of the old Russian aristocracy. Among these were the timber "Datchia," or country retreats, constructed of light framing, finished externally with weather-boarding. In the manufacturing districts of Kaluga many fine stone and brick built villas of the period of Napoleon still exist. In the formation of the lesser buildings of this class may be seen a legitimate attempt to assimilate foreign thought. Of the larger buildings already referred to, it can be said that their character expresses an extension of ideas current in France, Italy and England.

NORWAY AND SWEDEN

An analysis of the earlier expressions of architecture in which the use of timber is prominent calls for a special study. Since the establishment of the Christian faith in Europe successive waves of stylistic influences have effected changes in the buildings of different countries. The reason lies outside the sphere of generalization and can be attributed without hesitation to the monastic orders, who imposed the style of building with which they were familiar. Prior to this, timber architecture had flourished in Norway for a long period. There are, for example, records of over three hundred timber churches, some of which are standing to-day. The design of the mast churches shows less of caprice than logic in their structural devisement. That the constructors were men of great ability can be seen from the church at Borgund. Here both plan and elevations were determined by the placing of the masts or uprights upon a rectangular framework of sleepers forming the base, a principle which constitutes one of the elementary rules of carpentry. The development of an apsidal-ended plan, beyond the nucleus of the masts, proves the influence of the imported Romanesque style amplifying existing traditions. As a particular form of construction suited to its purpose invariably begets a corresponding invention for another particular purpose, so the isolated bell towers peculiar to Norway and Sweden are typical of this Northern European style. The bell towers were designed on pyramidal lines to house the bell cages and to counteract vibration. This separation of the bell tower from the church not only avoided the difficulty of movement affecting the stability of the main structure, but was an additional protection against fire. The extreme difficulty of incorporating a tall bell tower in juxtaposition with the church was no doubt the real reason for their insulation. The isolated

timber bell towers of Sweden, such as the famous one at Gamla Upsala, are on similar lines but of larger scale.

The external treatment of church roofs rising in stages, also a marked characteristic, is repeated in the diminutive church at Urnes, which carries a bell cot crowned by a small steeple. Many of the essentials of Gothic timber construction are to be seen in these and other similar churches.

The most striking effect of the mast church is that of internal height as opposed to lengthy vista. At Torpe Church, Hallingdal, the masts of the central portion are carried up to the central *flèche*, the introduction of intermediate semicircular arches resembling the ribs employed in ship construction. The use of timber encouraged invention in systematic construction, especially the use of struts and braces at salient points to take thrusts and strains. The early braced roof trusses, as in the church at Gol, allowed for ingenuity in the shapings of the members of the truss. The external treatment of the above mentioned churches reduces the vertical surface of the walls to a minimum. There arises from this a strong presumption that the need to protect the structural timbers from the ravages of the climate, no less than the extreme perpendicularity of the interior, led to the adoption of roofing by stages. The student will turn to the timber churches of Scandinavian and Slavonic countries for examples of the free treatment of timber and diverse plan formations.

In a comprehensive view of architecture it is the variety of plans and elevations that proves the universality of the law of building. In other words, the theory that all is possible provided structural requirements are observed. The truth of the foregoing is proved by the design of the church at Westanfjord, Finland, or the churches of Galicia and Carinthia, where stylistic features common to other materials find similar expression in timber. In the church at Bielavce, Galicia, the vertical surfaces are of upright scantlings for the reason that the abundance of local timber was the main factor in the construction. The interesting cruciform plan of the church at Ruovesi, Finland, demanded the highest skill in the design of the roof timberings. In the latter case we have pre-determination of design expressed in a special material. In the case of the mast churches previously described the plastic effect resulted from the rational use of local material, incorporating traditional forms.

Since the important determining factors in architecture, cause and effect, are closely interlocked, it is not strange to find similarities in the outward expression of buildings in countries otherwise widely separated.

The art historian cannot do other than place reliance upon precedent and the sequential evolution of types of buildings. It is becoming clear that architecture in its subjection of materials frequently admits repetitive themes. The close analogy, therefore, between the treatment of Chinese and early Norwegian roofs, or even the roofs of northern Galicia, is another verification of this interesting fact.

Historical architecture in Sweden includes mediæval buildings of the scale of Upsala Cathedral and the Storkyrkan at Stockholm. This aspect of mediæval art, which dates from the fourteenth century, was inspired from France, the Netherlands and North Germany. In the sphere of woodwork, carving and painting the works of art rank equal with the sources which inspired them. The development of Swedish architecture on classical lines, however, dates from the seventeenth century, the triumphal arch erected on the occasion of the crowning of the Queen of Sweden being an instance of a design based on that of the Arch of Constantine, Rome. In the eighteenth century designs based on the manner of the Italian Baroque led eventually to the purely academic style associated with the reign of Gustavus III. The fame of Swedish classical architecture rests chiefly upon the magnificent palace designed by Nicodemus Tessin between the years 1693-97. This design, which recalls the composition of the Farnese Palace at Rome, owes its grand effect to the composition of the steps and the approach ramps on the north façade, the insistent repetition of one type of window providing the essential contrast to the rectangular mass of the building.

The Riddarhuset, with its elegantly shaped copper roof, is a clever adaptation of the French manner of Louis XIV, while one of the most interesting compositions is the house built by Tessin for his own occupation. This was completed in 1700. The chief interest of this design is the garden with its vistas and a belvedere forming a background after the Italian manner. The aptitude of the Swedish architects to assimilate architectural ideas from neighbouring countries has been evidenced at all times. The Opera House at Stockholm, for example, recalls the façade of the Monnaie in Paris, while many private houses of large size follow the Dutch manner of the late seventeenth century, as may be seen in the extravagant treatments of scrolled gables and bulbous cupolas. Another, but later, example, the Kina Slott at Drottningholm, was built from designs by Sir William Chambers, but this particular building should be regarded as a fantasy in the Chinese manner.

From 1654 to 1718 the Swedish style in the main followed the general Renaissance trend of Europe. For example, the picturesque style of the seventeenth century which formed the vernacular for palaces and street façades in Stockholm shows affinity with the work of the Netherlands of the same epoch. It was towards the close of the seventeenth century that the influence of France spread to Scandinavian countries; this was due to the fact that by this time Paris had become the art centre for Europe. The preference shown for temporary buildings, especially processional triumphal arches, in the classical style, is an indication of prevalent fashion. As already mentioned, it was the scholarly designs by Tessin that gave Swedish architecture its classical expression during the reign of Charles XI. At this period many new churches were built, the steeples of which followed Dutch precedent. Many important buildings at Stockholm were at this date inspired by French architecture, and the same remark applies to the majority of the lesser country mansions. The architecture of the period that followed, from the eighteenth down to the beginning of the nineteenth century, also inclines towards contemporary French models, the influence of the periods Louis XV and Louis XVI being very apparent. In the design of churches the embellishment of towers with cupolas and lanterns to form pleasing silhouettes is most characteristic. During the time of Gustavus III Swedish architecture and decoration reached a high plane. Among the notable palaces of this period is the Skeppsbron in old Stockholm, a building equalling designs by Neufforge. Towards the end of the period neo-Greek details were applied indiscriminately both to new designs and to features of existing buildings. The first quarter of the nineteenth century extended the eighteenth-century traditions, which were continued as late as 1840. From this period onwards, with the exception of such distinctive buildings as the theatre in Humlegården, 1850, and the bridge over the Riddarholm Canal, the architecture is uniformly dull and lacking in interest. From 1860 the Italian manner was again favoured, as can be seen in the National Museum, the Art Academy and certain hotel façades. In the design of the Nordiska Museet, built between 1889–1904, is to be seen an attempt to revive the Netherlandish precedents of the seventeenth century. Finally, with the erection of the new technical High School by Erik Rallerstedt, which began as late as 1914, we see an early attempt to break with tradition. That new ideas were in course of acceptance at this period is recorded in the design of the Stockholm Radhus and the

Engelbrektskyrken. The demand for a more modern type of building has been continued in the Kungsgatan, where American influences are seen in a species of skyscraper. Among more recent Swedish buildings of note can be cited the Högskolan by Ivor Tengbom, 1923, and the famous Stadhuset by Professor Ragnar Östberg. These buildings must be regarded as heralding a revival of romanticism tempered to suit a modern outlook. In summing up the characteristics of Swedish architecture of the last two centuries it can be said that the fluctuations of fashion resulted in the adoption of various styles.

Chapter 6

AMERICAN ARCHITECTURE

IT HAS BEEN ENDEAVOURED to show that the architecture of the European civilizations followed the trend of various religious and æsthetic movements prevalent from time to time. America from the earliest Colonial days fostered art movements analogous to those of the countries whence she drew her diverse streams of immigrants. The fundamental conditions of first conquering Nature and then developing material resources resulted in a newer expression being given to traditional forms. Recurring to what has been already stated, it was the creative spirit triumphing over material difficulties which imparted a new and vital character to ideas imported from overseas.

America was discovered too late to be influenced by the spirit of Gothic art, and too early to receive the brisk developing spirit of Renaissance art from Italy. The English, Swedish and Dutch settlers who landed on the eastern coasts in the seventeenth century were more concerned with consolidating their position in their new environment than with attempting grandiose structures. Nevertheless, the earliest domestic buildings are reminiscent of others of similar type in European lands. This also applies to the Spanish type of buildings in Mexico and on the West Coast.

It was inevitable that the colonists should try to make the new houses resemble the old models with which they were familiar. There was, however, the resistance of material, in this case timber, the working and assembling of which affected both structure and proportion. The vicissitudes of climate, ranging between extremes, demanded that the dwellings should be warm in winter and cool in summer; there was the need for protection from Indian attack and the necessity to build rough. It is not strange, under these conditions, that the handicrafts of the Middle

Ages were carried over and survived in America down to the introduction of steam power. It can be said, therefore, that building in Colonial America began on a plane not far removed from the spirit of the domestic crafts of the fifteenth century. Log cabins, framed houses, barns and sheds recalled the countryside domestic features of England, Sweden, Germany and the Netherlands. By the middle of the seventeenth century a definite style for domestic buildings was in being. Building in stone and brick was hampered at first by lack of suitable lime. Eventually masonry and brickwork became more general, especially for churches. For the latter the designs were at first based on Gothic models. The tower of St. Luke's, Isle of Wight, County Virginia, repeats almost exactly a brick-built tower of the time of Archbishop Laud. The interiors and fittings of churches and meeting-houses of this period recall the Jacobean manner in the treatment of woodwork. The meeting-houses in design were similar to the Dissenting chapels of the type favoured by the Huguenots in France and the Quakers in England.

From the timber houses of the seventeenth century, with their overhanging storeys, great fireplaces and rough timberings, were developed those ambitious brick mansions, almost replicas of designs by Vingboons and the school of Sir Christopher Wren. The Great Fire of London in 1666 and the volume of new buildings it called forth was not without effect on the architecture of America, especially in developing the design of brick-built dwellings. It is known, for example, that Sir Christopher Wren sent designs for William and Mary College.

The building development of modern America, in so far as style is to be regarded, divides into five main groups: (*a*) the Early; (*b*) the Colonial; (*c*) the Republican; (*d*) the various revivals of Historical styles; (*e*) the modern or steel and concrete phase. An analysis of these groups is essential to an understanding of the spirit of American architecture. It has already been shown that the earliest buildings were largely modelled on contemporary buildings in Europe. The Colonial period proper begins on the firm basis of the Wren tradition, and then came the influence of the pattern books, builders' guides and illustrations of buildings of all types, issued by the printing presses of London, Antwerp, Amsterdam, Paris and Rome. The Colonial phase, therefore, represents the form in which the spirit of the Renaissance was interpreted across the Atlantic. With the development of colonial government and the gradual apportioning of vast areas of land to fresh waves of

settlers there developed outside the towns a system of land ownership which was expressed in terms of country houses, mansions and farm buildings. In the towns each phase of architectural fashion, from the Palladian manner of Gibbs to the macaronic designs of the Adam brothers, can be recognized. Amateur architects were abundant, thanks to the pattern books and "builders' directors." English, French and Dutch architects were among those attracted to the colonies to exercise their professional skill. New churches, recalling those of London, were copied from the plates in Gibbs' and Ware's books. The meeting-houses and small chapels multiplied in number and in time took on classical dignity. The design of the State House in Philadelphia by an amateur architect, Andrew Hamilton, while recalling motifs of the matured Renaissance in England, introduces a new form of architectural grouping in which symmetry and balance are present. Country houses of the dignity of Westover on the James River show regard for rectangular planning. In this example is to be seen a building definitely Georgian in inspiration, the chief features in the elevation being the enriched doorway and the uniformity of the spacing of the white-painted sashed windows. With the introduction of porticoes, the most characteristic Colonial feature was initiated. The use of timber admitted of elongation in the vertical proportions of classical columns, and this in turn led to ingenuity in the assembling of suites of mouldings. Further, great licence was allowed to the development of ornament. The Colonial period was fortuitous, for it gave scope to the carpenter and the joiner whose conjoint labours reached their apogee in the ornamental staircases, panelled rooms and elaborate fireplaces. On the decorative side the admixture of French, Chippendale and Chinese ornament called for skilful handling. In all such works there is to be noted a slight divergence from the models which inspired emulation. The survival of the use of timber as a building material was not without its influence in the ultimate shaping of houses which in the main conform to Georgian practice. Gore Place, Waltham, Massachusetts, built about 1805, suggests the influence of Henry Holland.

One of the most striking proofs history affords of the effect of political change on the arts is evidenced in the architecture of the Republican period. The new regime determined that America should maintain sturdy independence, if not aloofness, from the English tradition. With America's coming of age, new public buildings were required of

every conceivable type. On this account it is not surprising that President Jefferson should have turned to the Roman monuments for ideas. His design for the capital of Virginia, at Richmond, recalls the *Maison Carrée* at Nîmes, which he had studied while in France. It is clear, therefore, that American architects anticipated the later phases of the classical revival for public buildings and institutions. Among other architects, Joseph Mangin, John McComb, James Hoban and the famous L'Enfant expressed in their architecture the first ambitions of the new Republic. Another architect, Bulfinch, introduced a variant of the French classical manner, while Thornton, a talented amateur, followed the style of the Adam brothers. Through all this period of experiment with classicality President Jefferson's influence was paramount; and in the University of Virginia he gave a final expression to his Roman ideals.

The adaptation of Greek details to the Roman forms already transposed to serve for universities, banks and public buildings was the next step in the development of American classic. It is significant, also, that English architects found opportunity to design buildings and decorations to suit prevalent tastes. There was a general enthusiasm for classical precedents as a basis for new design. In this regard American fervour equalled that of England. Benjamin Henry Latrobe was one of the first to gain distinction with his design for the Bank of Pennsylvania, which was built entirely of marble. This much acclaimed building was based on the Roman Pantheon plan. It was simply a domed banking hall with a hexastyle Ionic portico of Greek simplicity. The demand for literal transcriptions of classical architecture which followed led to many reproductions of the Parthenon for façades. In this connection the Bank of the United States, Philadelphia, ranks as one of the earliest buildings of this type. Thus even at this period America found it expedient to adopt classical models for contemporary needs.

From 1815 to 1830 Greek antiquity supplied ideas for commemorative monuments, town halls, churches and even for domestic buildings. From the foregoing account it can be said that the official style of American public architecture owes its inception to classic precedent. The buildings of this period were in fact the most distinctive contribution to the national style. A departure in architectural taste was the growth of revived Gothic due to the influence of England and the Romantic movement. It was the historical spirit which brought

into being the castellated elevations and towers of the Penitentiary at Philadelphia. Another building where the Romantic influence determined the adoption of the Gothic manner is Trinity Church, New York. From 1840 to 1870 the influence of the *Ecole des Beaux-Arts* produced designs reminiscent of French châteaux of different periods, as well as curious versions of the Italian Renaissance. It was the age for reproducing motifs from the façades of the Louvre and the Hôtel-de-Ville, Paris. The vast number of public buildings erected after 1870 shows how dependent America had become upon new ideas from Europe. The vulgarization of historical types lacking genuine purpose marks this phase. It was a period of unrestrained ostentation. The loose character of scroll-saw ornament, fantastic brackets and imitation stonework indicates ignorance of the potential qualities of building. A new influence which changed things for the better came from Henry Hobson Richardson, who, inspired by the Romanesque of Southern France and Spain, introduced a powerful manner which found many supporters and imitators. It was this school which prepared the way for the acceptance of fresher ideas from England, particularly those gleaned from the works of Philip Webb and Norman Shaw. A trio of scholars, McKim, Mead and White, now became distinguished for a new Colonial revival, and latterly for renewing interest in the monuments of the Italian, French and English Renaissance. It was the avowed policy of these talented architects to endow America with a series of scholarly compositions which would serve as the basis of a definite modern style. Their main purpose was to continue the Jefferson tradition. If the classic side represented the ultimate destiny of monumental architecture as conceived by Jefferson, the Romantic aspect was maintained by Bertram Goodhue in his masterly treatment of Gothic. The military Academy at West Point, with its castellated silhouette, completes the cycle of revived mediævalism for architecture in America.

It is clear that the revivals of architectural styles led ultimately to that search for free expression which has had its repercussions in Europe. The development of free Gothic by Goodhue and his followers must be regarded, therefore, as the first attempt to return to the logic of direct design. It was the predetermined vision of form that in the first place decided the verticality of the skyscraper and the subordination of the steel frame. But it was the rocky foundation of New York and the perfection of the steel cable for lifts that made such an innovation pos-

sible. The new materials, steel and reinforced concrete, now gave scope for buildings of vast size and new capacity. From the time of the building of the Crystal Palace in London in 1851, iron and glass had been developed to express the new resources of machinery. Reinforced concrete was to be enlisted to produce industrial structures of great efficiency, and gave scope to combinations of shape for which no precedent existed. This new age was one of expressive architecture in which economic rulings encouraged new creations devoid of surface ornament but eloquent in silhouette. It must not be forgotten that the old materials, stone, brick and timber, lead, copper and iron, forming the very basis of ordinary methods of construction, are essential to the moods of a national architecture. It will be recognized that a formula for architectural devisement does not exist; on the contrary, it is co-ordination of materials and their subordination to a great idea that produces imaginative and rational design. The human interest in architecture originates with the sensation provoked. The abstract quality which a talented designer alone can impart to building has also to be considered. This abstract quality may result from a logical observance of the different factors of a problem combined with expression of purpose. In the pursuit of such achievements the distinctive contributions of the pioneer Louis Sullivan, and his disciple, Frank Lloyd Wright, are inspiring, but must not be regarded as all-conclusive.

From a study of American architecture, as developed during the past quarter of a century, can be deduced the following facts. Primarily the influence of contemporary movements in Europe; secondly the contribution made to the art by American architects, who evolved new types of mammoth office buildings.

In the former category ecclesiastical buildings such as the Cathedral Church of St. John the Divine, New York, a mixture of French and English Gothic; the Episcopal Cathedral at Washington; or the First Baptist Church at Pittsburg, are examples. These great structures combine the principles followed in the Middle Ages with more recent invention in external massing. These and other buildings of similar character show how design can evolve within the forms of imported tradition. The extent, however, to which tradition can be misapplied can be seen in the formation of the New Pennsylvania Railway Station, a classical structure reminiscent of the Baths of Caracalla. The railway tracks are completely submerged beneath a vast hall of great impressiveness.

The façades are arranged to complement the central hall and to mask the various minor offices, ramps and carriageways, the aim being grandeur of effect, externally and internally. The exact observance of the laws of symmetry, axiality and balance, conspicuous during the phase when the influence of the Ecole des Beaux-Arts was at its zenith, is shown in this building. From attempts to endow America with noble architecture inspired from the past, we turn to those of indigenous value. In commercial architecture America reigns supreme. The conception of towering structures, or tapering or receding silhouette, resulting entirely from conditions imposed by sites in New York City, pertains to a new order.

Vertical architecture engendered a formula for masses for which no precedent existed. At first the classical tradition was exploited to create new values, and as a corollary the vertical elements of Gothic were subjected to similar adaptation.

The Municipal Building, New York, designed by McKim, Mead and White, presents the classic viewpoint applied to the composition of a building twenty-five storeys high and a central tower rising higher. In this case the classic elements were reserved for the podium storey and the crowning loggia. The design of the tower, in tiered stages, follows the principles adopted by Sir Christopher Wren and his successors.

In the tower-like Woolworth Buildings, or the Bush Tower, New York, Gothic is the theme. In these cases the attempt to veneer steel construction with historical features has resulted in excessive attenuation and misplacement of detail.

In the design of the following skyscrapers, namely, the Panhellenic House, New York, and the Empire State Building, New York, an attempt has been made to evolve mass directly related to the problem. In the highly successful design of the Hotel Shelton, New York, a new version of the Babylonian ziggurat makes its appearance. The change from the enveloping shroud of ornamental features to a definite plain surface treatment led to a renewed study of massing. The great note of originality, however, was achieved by Eliel Saarinen, a Finn, in his masterly design for the premises of the Chicago *Tribune*. This building consists of a square tower with ribbed features accentuating the general verticality. This design connects the work of Sullivan and Frank Lloyd Wright to the present day. The American aptitude for the stupendous is not confined to the narrow sites of Manhattan, but extends

to the creation of civic centres in other cities. It is also anomalous that the principle of tower design should be transferred to places where the need to build high does not arise. The State Capitol at Lincoln, Nebraska, designed by Bertram Goodhue, is conceived partly on the skyscraper model, but mainly as a monumental tower rising out of a low subsidiary mass. The design, although successful as a composition, in its silhouette reveals traditional features.

The great possibilities offered to architects in America to be original are well known. In this the training of the *Ecole des Beaux Arts* has played no small part. The principles of clarity in planning, of imagination and boldness of conception, are well understood. The full effect of French planning can be seen in the layouts of universities and great institutions, as well as in the planning of national libraries and galleries.

Paul Cret in his teachings, and through his own work, has had great influence in the formation of a logical manner, while it must be conceded that architecture of all the arts is one most needing proficient study. It is also necessary for the art to be kept alive by constant reference to prevalent conditions. The contribution of America to architecture has been a new type of building, the skyscraper, resulting from observance of financial and commercial requirements.

Chapter 7

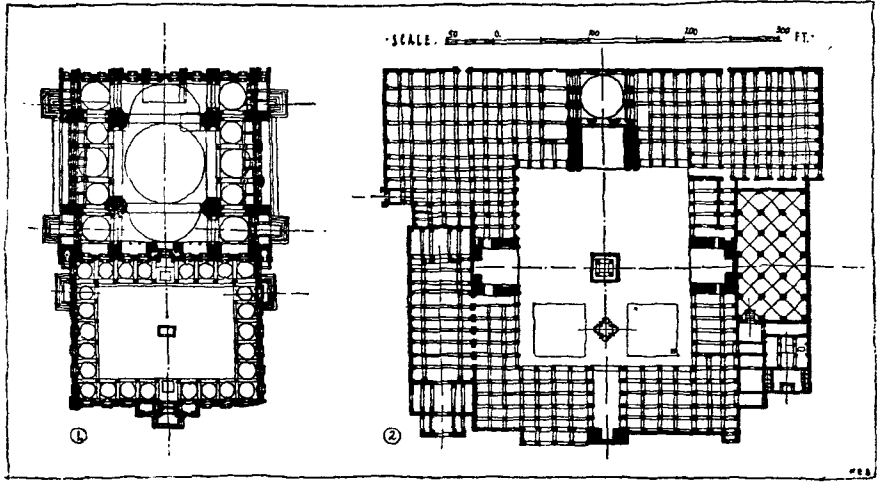
NON-EUROPEAN ARCHITECTURE

ISLAMIC

THE SPREAD OF THE Islamic faith had the immediate effect of a development which absorbed ideas prevalent in the subjected countries and at the same time imposed definite conditions for new problems.

The immense success of the Arabian conquests, although primarily confined to the East, in time reached on the West as far as Spain. The exact workings of this movement can best be described by defining the architectural forms which were blended with local traditions. Although the Arabs, being nomads, had no proper art of their own, they created a style by imposing the tenets of their religion on the conquered. In religious architecture the mosque is an important contribution. The minaret, the mihrab and the minbar are some of the features which were transposed to suit the basilican or cross plan adapted to local materials and requirements. The earliest Islamic buildings are nothing more than local types of construction arranged to suit the new faith. In this is to be seen something unusual, for it is generally the conquering race that determines the style. Islamic art produced five schools, namely, the Egyptian, the Persian, the Moorish, the Anatolian and the Hindu. The types of buildings include, besides the mosque, tombs, palaces, khans, gateways, baths and fountains. In all these types will be found variations of the treatment of the arch and of dome construction. In the mosque the nucleus of the type of composition centres round the mihrab or kiblāh, a niche hollowed in the wall and placed in the direction of Mecca, towards which the faithful must turn while praying. The niche wall is preceded and surrounded by colonnaded porticoes. There is a

central courtyard and a fountain. The plan of the Mosque Amru at Cairo is a well-known example. All the early plans for mosques are on this pattern, thus allowing covered space for the congregation with a courtyard for the overflow. The open-air nature of the services was the determining factor in the arrangement. During the Ayubid period the cruciform plan was adopted, following the fashion of the medressas.



ISLAMIC ARCHITECTURE IN TURKEY AND PERSIA

PLANS OF MOSQUES

1. PLAN OF MOSQUE OF SULEIMANYEH, CONSTANTINOPLE

The Byzantine type of plan adopted for the purpose of a mosque.

2. THE GREAT MOSQUE AT ISPAHAN

Multicellular formation framing a rectangular open space, with accentuations of main centres.

Among the edifices of public utility were the caravanserais, schools, hospitals and medressas or theological colleges.

The khan or caravanserai is best illustrated by the plan of that of the Sultan Hussein at Ispahan. It is composed of two parts, each grouped about a central courtyard. The first part is a medressa or theological college with a mosque, the second part comprises the khan proper. The principle of the plan is a series of sleeping cells connected on one side by a covered market, and on the other facing an open courtyard, the stables for horses and camels being placed at the head of the plan (see illustration).

But it was not until the contact of the Islamic with Byzantine civilization that the cupola was adopted for mosques. It was extensively used by the Turks after the fall of Constantinople. It is of interest to realize that the extension of the eastern wall and colonnade on either side of the central niche to accommodate more worshippers led to the cruciform plan of Mesopotamian origin.

One of the finest examples of domical design is to be seen in the mosque of Suleiman at Constantinople. The dome of the mosque of Hassan at Cairo, and that of the Imperial Mosque at Ispahan, are similar to many other examples showing the Byzantine cupola adapted to fresh conditions.

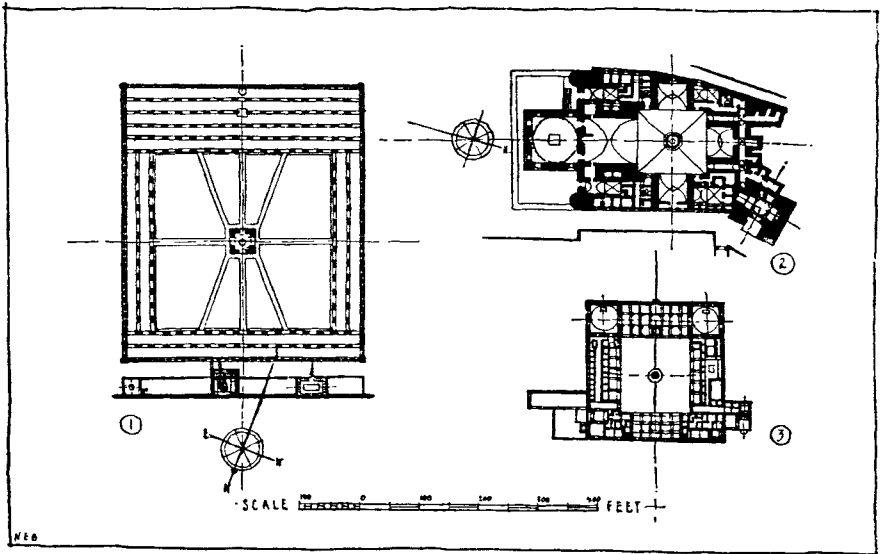
We must turn, however, to the conquered city of Constantinople to study the finest domed mosques, such as Sultan Ahmed the First, Yene Valede and Noni-i-Osmanieh, each of which recalls the parent edifice, Santa Sophia.

The finest contribution of Islamic architecture is beyond question the minaret which became part of the external effect of the mosque. The design of the minaret varies in accordance with the school to which it belongs. The minaret of Samara, Mesopotamia, is of a spiral form after the style of the ancient ziggurat. In Syria and Egypt the storeyed circular or polygonal minaret partakes of cylindrical forms, while in Constantinople the needle form is adopted. The square type of minaret is to be found in Morocco, as at Marakesh and at Seville in Spain or at Oran in Algeria.

The practice of grouping three buildings together is sometimes encountered, as at the Moristan of Kalaun, Cairo, where there is no correlation between the elements, but each entity, i.e. the mosque, the tomb of the founder and the hospital, is planned as an isolated component, and connected by labyrinthian passages. In domestic architecture the same principles of grouping small elements about the four sides of a rectangular central space was almost universally followed, as at Cairo, Ispahan, Granada and the palace of Lahore. When everything else has been considered in Islamic architecture the ingenuity exhibited in placing a circular cupola over a rectangle is outstanding.

The crowning of a polygonal or rectangular plan by a spherical cupola led to many expedients which are different from the principles of the pendentive. It is in the treatment of the Persian cupola, where the change from the circular to the square is by means of a series of receding niches,

or, as in the case of the cupola, at Tlemcen, where interpenetrating squinch arches mark the transition from the square to the circle, that this form of structural expedient is seen at its best. Another example which might be termed Egyptian occurs in the mosque of El Moyed, Cairo, where a series of beehive corbels form five rings of unequal numbers



ISLAMIC ARCHITECTURE

PLANS OF MOSQUES

1. MOSQUE OF IBN TULUN, CAIRO

Plan shows open space framed by regular arcades. Perspective effects gained by repetition of minor parts.

2. MOSQUE OF SULTAN HASSAN, CAIRO

Plan shows dominant central volume supported by arms forming a cross plan. The various additions are formed to suit the irregular site.

3. MOSQUE AND MONASTERY OF BARQUQ, CAIRO

Plan with central entrance leading to Courtyard. The arcade system frames the ensemble.

which carry the circular surface of the dome to the re-entering angles of the rectangular space.

Similar treatments of corbelling are to be found in the designs of monumental gateways, such as is the gate of Khna Aksad Pasha in Damascus, and the magnificent porch of the Sultan Hassan Mosque in Cairo.

The importance and convincing proportions of Islamic architecture open up a vista of plastic forms which has not been fully apprehended. Not only is this line of study essential to any analysis of architectural principles, but the subject is germane to the study of famous buildings. The actual principles of Islamic design are analogous to those already discussed for other countries, the uses to which the buildings have been dedicated alone imparting the impress of character. This point is best demonstrated in the design of houses in the cities.

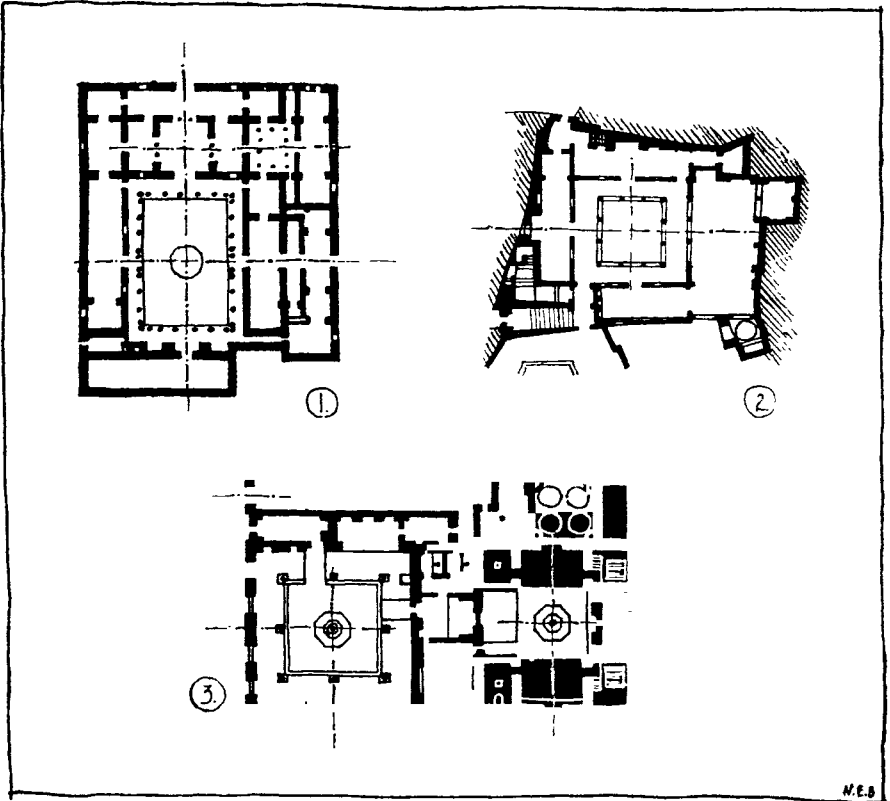
The plan of the town house was the outcome of the desire for the maximum amount of shade in a hot climate. Grouped about a central courtyard, the principal apartments face inwards. Occasionally one façade opens on to a street or narrow alley. Other types built on insulated sites as at Jeddah are constructed in stages, with boldly projecting features. At Mecca the embellishment of the uppermost storey as a wooden structure of great richness provides a striking contrast to the wall surface below. The predominant theme of the Islamic builder was to give colour to the surface of his buildings either by the textual treatment of the material in lacings, or by the application of ceramics and painted decoration. Although Islamic architecture obeyed the primary laws of structure and added its own expedients, it allowed transposition of monumental effects in terms of timber and stucco. In the palace plan of the Islamic period the system of courtyard planning is multiplied with the Durbar Hall as a central feature.

Funerary architecture, while in a class of its own, touches on almost every feature already discussed. In the tombs of the Mamelukes, the ovoidal dome is adjusted to the rectangular plan by the introduction of broaches and splays at the four angles, which recall Gothic expedients. But it is the Taj Mahal at Agra, with its free interpretation of the principles already enunciated in connection with domes, minarets and niches, that stands as the final monument of Islamic culture, a culture, moreover, which stretches from the seventh to the seventeenth century A.D. It is to be gathered that the special character of any of the schools of Islamic architecture was due to the type of arch opening adopted, as well as to the method of vaulting or covering the void space, either large or small.

The ornamental patterning and the surface decoration, which is also a special feature of the Islamic style, presents a similar case to the

THE ART OF ARCHITECTURE

architectural forms, inasmuch that it is varied to suit local craftsmanship and materials. The key motive to each school of Islamic architecture, namely, the form of arch which was adopted to meet local conditions,



ISLAMIC ARCHITECTURE

1. ALCAZAR, SEVILLE

Effort to balance a plan about a courtyard. The axes left open to create vistas.

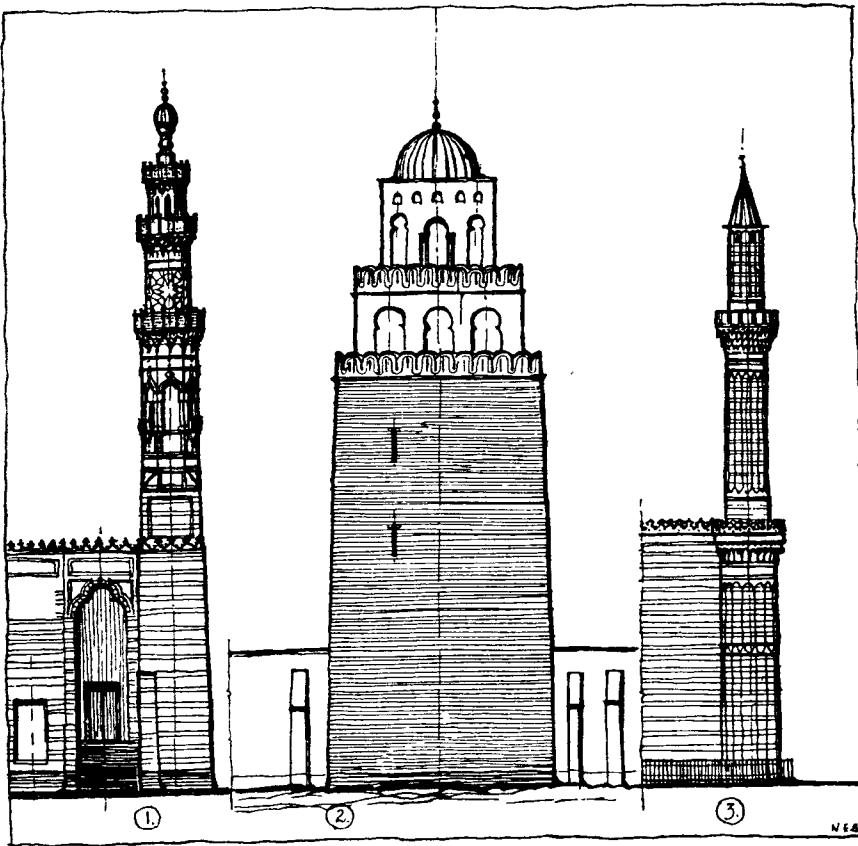
2. ALMS HOUSES, ALGIERS

Forcing a regular plan shape within the boundaries of an irregular site.

3. OLD PRIVATE BATHS, CAIRO

Typical Islamic plan. Baths grouped around inner courts.

materials and methods of construction, may be analysed as follows. In Egypt and Syria the usual types of arches are either semicircular, often flattened and stilted, or of ogival form; the latter is also a feature



TYPES OF MINARETS

1. Tiered minaret changing form from square to polygonal and circular. (EGYPTIAN.)

2. Staged tower with strong base and tiered lantern. (MOORISH.)

3. Needle-form minaret in three unequal stages. (SYRIAN.)

In every case the attachment of the tower form to the mass of the building is sympathetic.

in Persia and India. In India the Mogul ogival arch is sometimes ornamented with cusps. This form is part of the Buddhist and Brahman tradition. The horseshoe type of arch found in Algeria, Morocco and Spain belongs to the Western branch of Islamic art. In

the Moorish architecture of Spain, as at Cordova, is to be seen the novel interlaced and cusped forms of arcades. The various sections of vaults relating to the different schools can be described as ogival in Egypt, ellipsoidal in Persia, conical in Anatolia and bulbous in Persia and India.

A wide diversity occurs in the treatment of the vertical support or column, with its distinctive capital and base. The principle of the abacus is understood, and also the ornamentation of the hypotrachelion, or necking, which is generally very lengthy. Forms of ornament recalling the lotus of Egypt, the foliage of the Corinthian capital, the beehive pendentives and Ionian scrolls proclaim the various attempts made at different times to reconcile Islamic art with local traditions. The poetic aspect of this entrancing style is perhaps best seen in the development of timber structures, such as the garden pavilions of Persia. It is echoed in the painted wooden ceilings of Granada and Seville, and the projecting balconies of Egypt and North Africa. The mousharabyeh or screened bay window, which is carried on corbels or brackets from the general frontage of street architecture, has called forth skill in its adjustment to the wall from which it is advanced, and ingenuity in the geometrical patterning of the timbers which form the construction.

The feelings of admiration kindled in the mind by buildings of Islamic character can be attributed to the fact that religious observance did not debar scope for the allurements of the senses and the imagination. The subordination of heavy structural forms to the exigencies of small materials, the repetition of carpet patternings and the deliberate choice of wrought timber for elegant supports, demonstrate how the Islamic artist was determined to enrich the cruder expressions of structure. And truly so far as intrinsic beauty of surface effect is concerned it would be difficult to find a more convincing appeal to the artistic feelings than that presented by the works described.

INDIA AND NEIGHBOURING COUNTRIES

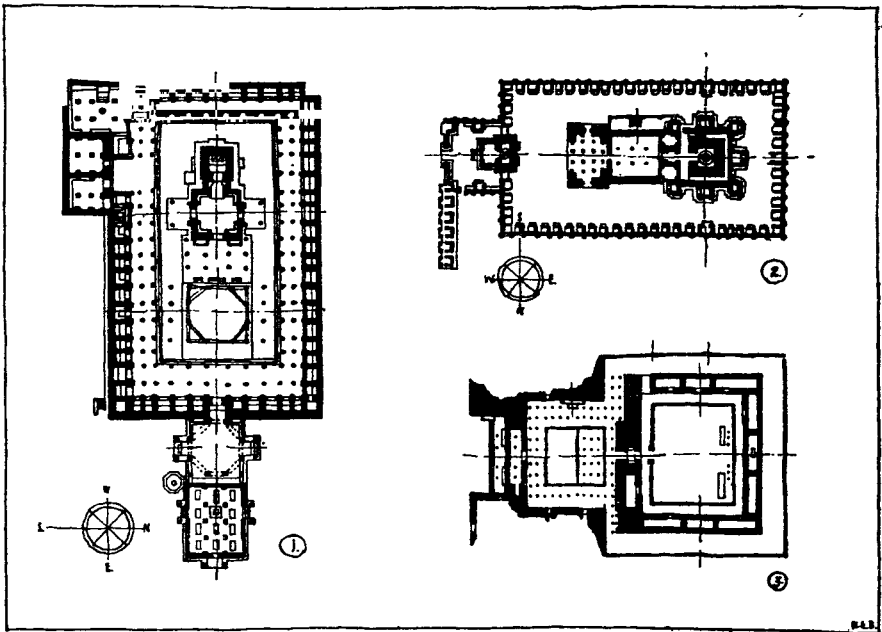
Of all the great works of architecture it is those that show profundity of imagination in form and construction that make the widest appeal. It is the collective quality of a nation's capacity for building that best expresses unity of ideals and characteristics. In studying the architecture of India one has to bear in mind the various forces which influenced the ultimate forms of buildings. In Indian architecture it is the effect on

the eye that seems to have been the dominant consideration. From the earliest times the unequal division of wealth has been accompanied by the oppression of the poorer classes. The various religions and mythologies have conjointly produced mysteries and cults. The appeal to the imagination has tended towards esoteric frightfulness and extravagance. There is no doubt that the minds of myriads, moulded to this line of thought, in time became intimidated to the acceptance of the weird and terrible. Indian architecture in its stylistic form finds its beginnings with Buddhism in the third century B.C. The Hellenistic influence must be regarded as purely extraneous, although in some parts of the country it lasted a long time. Buddhist art with its definite symbolism continued until the introduction of Islamism and found expression in the buildings of Burma, Thibet, Java and Nepal. The more elegant Jaina style not only influenced the succeeding Islamic innovations, but has had a continuous bearing on Indian art. The Islamic phases of Indian architecture in turn imposed rules and principles imported from afar. Broadly speaking, Indian architecture divides into epochs and schools in which several religions leave their impress. Primitive Indian architecture dates from the fifth century A.D. to the eighteenth century A.D.

Buddhist architecture includes commemorative columns, temples and monasteries, sacred enclosures and sanctuaries. The chief architectural feature is the lat or stampha; this is a column surmounted by the effigy of an animal. The sacred enclosures are areas surrounded by lats or stamphas. The disposition of these enclosures varies according to regions. In Ceylon it consists of two or three concentric rings. On the mainland, the columns are arranged as trabeated open screens, with special entrances, called toran, placed at the four cardinal points. The tope or stupa is one of the features of early Indian architecture. It began as a mound or a cairn surrounded by an enclosing wall. These mounds can be compared to the Pyramids of Egypt on a smaller scale or to the tumuli of Etruria, and may be seen at their best at Sanchi. In course of time terminal features for topes were introduced, varying from the rectangular box form to the umbrella top, and finally the spire-like forms of Burma. The umbrella top, derived from a timber prototype, was the accepted symbol of royalty and state. Herein is to be seen an interesting example of plastic form deriving from symbolism and eventually becoming an architectural attribute. Comparison of the

terminal of the rock-cut tope at Ajanta, with the fleched terminal of the pagoda of the Shoemadoc at Pegu, illustrates variations originating from the same idea. It is, however, the great variety in the plan formation of the later topes and their development into pagoda forms that is of importance.

The main pyramidal formation terminated by a flèche arises from a



INDIAN ARCHITECTURE

1. JAINA TEMPLE, VIMALA
2. HINDU BRAHMAN TEMPLE, KAILASANATHA, AT KONJIVERAM
3. THIBETAN TEMPLE, LHASA

Examples of planning composition on one major axis.

plan, which is elaborately polygonal; the base of the pyramid is enriched by a double range of miniature pagodas. It is clear that the builders appreciated the meaning of dominant and subordinate masses. The great temple of Boro Budur in Java, in the form of a nine-storeyed pyramid measuring 400 feet across, is the finest example of the Buddhist style. Its formation in regularly receding terraces, in plan and elevation, no less than the rhythmic repetition of the ranges of smaller temples

leading to the crowning feature, account for its impressiveness. The Buddhist temple was evolved slowly; the primitive type is to be seen in the rock-cut example of Kalai. It consists of the triple formation of narthex, nave and aisles and apse. The similarity of this plan to that of the Roman basilica is striking. The Buddhist monastery, built round a square courtyard enriched with trees, basins and fountains, provided the setting for four storeys of cells. The plan formations are generally composed of (a) sacred enclosure and central tope surrounded by chapels; (b) a minor sacred enclosure decorated with topes; (c) a third courtyard surrounded by cells for the monks; (d) assembly hall for meetings and meals. Sometimes the monastery is hewn out of the rock and in other cases it is built underground.

The Brahman or Jaina temple includes a small sanctuary or chapel, square in shape, to shelter the sacred image of the god. The programme followed is to build a sanctuary with a vestibule and large colonnade. The enclosure which surrounded the sanctuary is not only colonnaded but provides niches for statues. The Brahman temple has three alternative types of plan according to region. Here is encountered the square sanctuary with its vestibule, the hall of dancers and the refectory. Such groupings were enclosed by a wall with monumental gateways. Often, as at Ellora, the temples are partially rock cut. There arose from those programmes the need to express the sanctuary in a vertical division to call attention to the inner mysteries practised behind the enclosed walls. The pyramidal formations which are a feature of these examples, as at the pagoda of Tangore, generally rest on a podium. Regarding the conical portion of the design, the effect of height is increased by the horizontal stepped subdivisionings of the mass.

Various modifications of this treatment are extant. But in all cases rock-cut as well as built temples have their origin in timber prototypes.

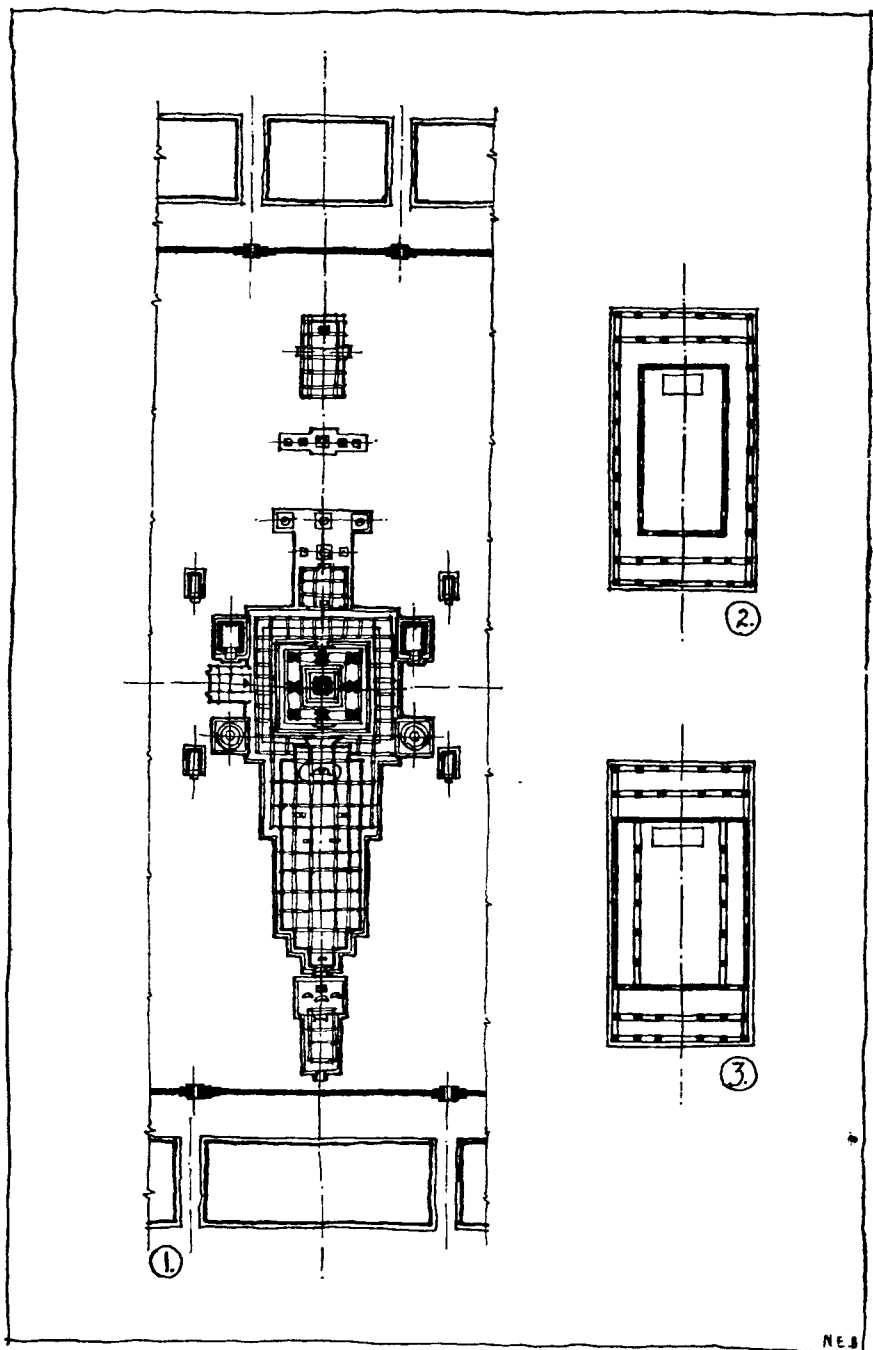
Regarding the curved roofs and vaults of Indian architecture, these are reminiscent of the thatched and wagon-headed coverings of small houses. The development of columns and vertical supports, either with or without bracket features in stone, allowed far greater variety in the treatment of surface, the decoration being equally distributed over the whole wall, the richness accruing from this treatment being singularly attractive. As in Egyptian architecture, pillars were never exactly alike in any one building, but varied in design according to position. It was in the design and placing of these pillars that the builders showed the

greatest taste and judgment. Another feature of Jaina architecture, the dome, differs entirely from the circular dome of the Occident. This formation of horizontal rings to constitute a pointed dome can never be made circular in section. The Jains were great builders of towers of victory, the most famous being that of Chitorgadh, nine storeys in height, and rising to 120 feet. Great ingenuity is exhibited in the architectural ornaments and the sculptural decoration. The repetition and comparative uniformity of the minor divisionings contrast with the two open storeys at the summit.

The peculiarity in the form of Indian architecture was the outcome of religious and social conventions which held the masses in subjection. It is not strange that the same luxuriance of carved detail should characterize each school of Indian art. There is no lack of imagination in the handling of forms which are strange to Western eyes. It was the abject submission and resignation of the masses of those days that made possible the creation of fantastic architecture.

The field of the Indo-Chinese Peninsula and Archipelago embraces many types of buildings, the more interesting being the monasteries on the sides of the mountains of Thibet and the temples of the countries adjacent to the Southern China Seas.

In these vast tracts of land the commingling of the arts of Nepal, India, Thibet and China have produced an architecture which is imaginative, original and rich in colour. The conjoint influences of Brahmanism and Buddhism have produced a multitude of temples, monasteries and palaces. The most remarkable are those of Cambodia with its monuments at Angkor. The great temple of Angkor Vat in the immensity of its layout, partly stronghold and partly monastic centre, exhibits a perfect example of logical provision. The formation of an artificial platform with external terraces, surrounding moat, bridges, gateways and internal enclosures constitutes an ensemble on the grand scale. But inasmuch as the result was grand, it was the necessity for raising the central part of the composition and at the same time affording protection from floods that dictated the procedure. The object of this immense building was to perpetuate the secret mysteries. In strict geometrical elevation the central pyramidal mass, with its numerous towers soaring majestically heavenward, rests on a strong horizontal base. At the extremities of the base stand low pavilions terminating the composition. But this amazing structure owes a great deal of its



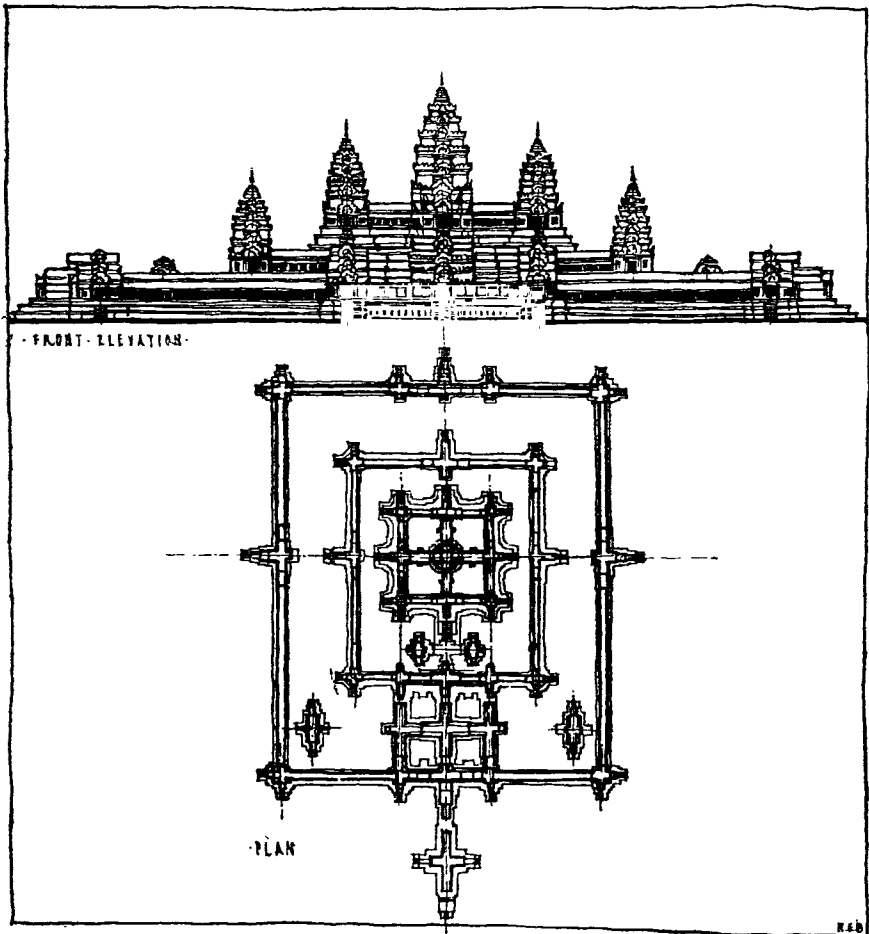
SIAMESE ARCHITECTURE

1. TEMPLE OF VATJAI AT SOKOTHAI

Plan showing forced elongation of longitudinal axis.

2 and 3. TYPES OF SANCTUARIES WITH ALTARS.

THE ART OF ARCHITECTURE



CAMBODIAN ARCHITECTURE

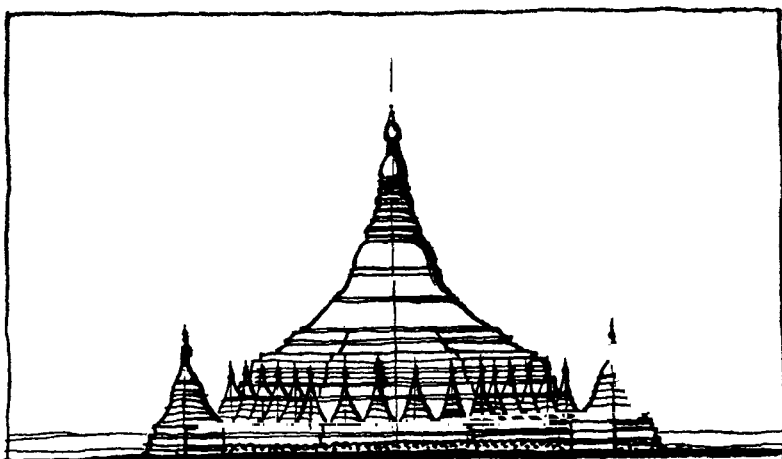
THE TEMPLE OF ANGKOR VAT

• Plan in terrace formation with main axes defined. The head of plan at end of the causeway approach is emphasized. The elevation demonstrates the value of contrasting elements, both vertical and horizontal, the central mass of three parts being dominant.

forceful character to the management of the axes of the plan, one of which, the major, is prolonged into an avenue causeway leading to the building and raised above the level of the floods. This avenue, recalling those of Luxor and Thebes, is bordered by parapets, steles and stairways of

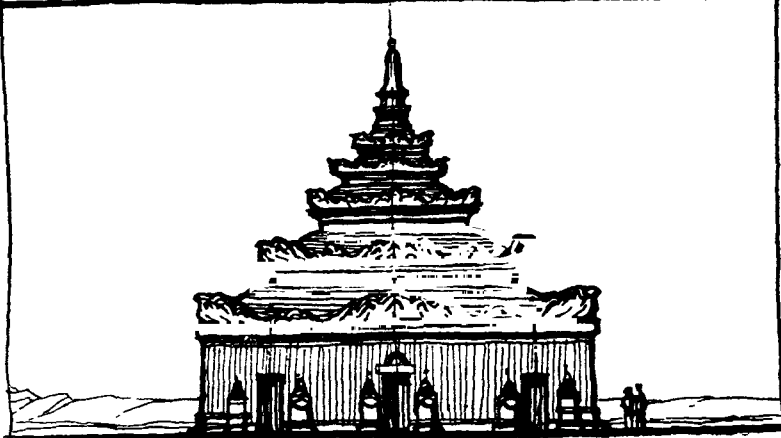
1. TEMPLE OF
CHOUE DAGON,
RANGOON.

Pyramidal composition with supporting forms of similar character forming a repetitive theme.



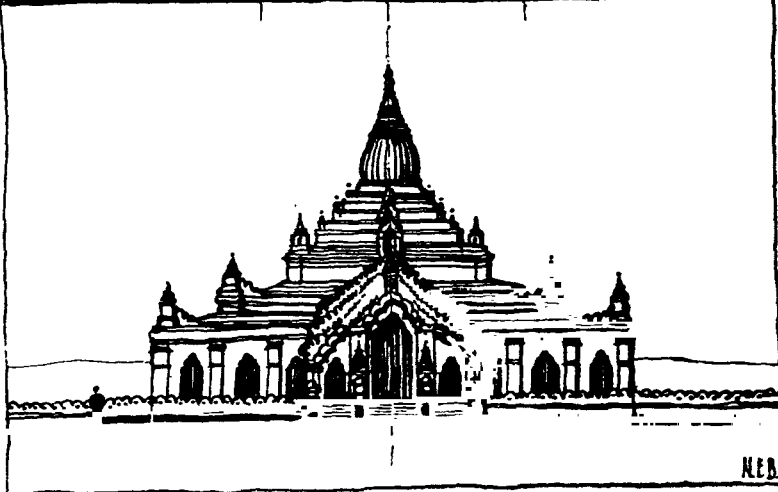
2. SACRED LIBRARY OF PITA
KAT-TAIK AT
PAGAN.

Pyramidal composition, each tier repeating the lower to a lesser scale.



3. TEMPLE OF
KYAUKTAVGYI AT
AMARAPURA.

Pyramidal composition with contrast of focal mass on centre.



BURMESE ARCHITECTURE

approach. The plan formation of the whole group consists of a square nucleus containing the sanctuary. The two surrounding enclosures are rectangular in shape. Reference to the plan will reveal the subtle ingenuity in composing a square within rectangular frames, the reason for this arrangement being the necessity for forming a large formal base court at the junction of the causeway with the upper platform. The treatment of the masonry forming the plinths and the basements of the various parts of the structure offer striking examples of architectural and sculptural skill. In Java the temple of Boro Budur, previously mentioned, forms a pyramidal composition of five terraces with a central sanctuary and approach. The forceful effect of this mass is enhanced by the repetition of innumerable niches, in all four hundred and thirty-six, which are integral with each terrace. Repetition of minor parts in sequence is once again demonstrated to be a principle of architectural conduct. It arises not so much from a desire to stress detail, as from the need to foil and increase the importance of the main structure.

Thibet, at one period a dependency of China, is one of the highest plateaux in the world. Severity of climate no less than the need to fortify the monastic settlements produced a style of architecture which owes its character to the locality. The conquest of Thibet by Kublai Khan, in A.D. 1253, placed the government in the hands of the lamas of the yellow hoods, but in 1720 the country was brought under Chinese rule.

There are many monasteries in Thibet, most of which lie between the Chinese and Indian frontiers; for example, Lhabrang, erected in the centre of Lhasa in the seventh century A.D., the monastery of Sakya erected in A.D. 1071, and the convents of Gandam A.D. 1409 and Sera A.D. 1417. From the point of view of architecture the great monastery of Potala at Lhasa, the palace of the Dalai Lama, built in 1642, is the most interesting. The external effect is that of a series of terraced buildings, stepped on a precipitous hillside dominating the town, which is grouped at the base. The mass of the wall surfaces and the fenestration in the upper parts recall the similar treatments of the monasteries at Mount Athos.

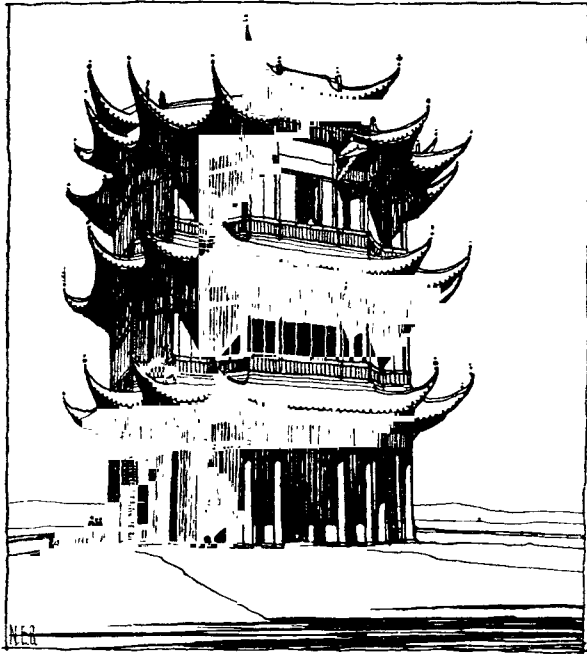
CHINA AND JAPAN

The question of the relationship of architecture outside the sphere of Europe to the traditional works of Classical, Mediæval and Renaissance times is worthy of attention. Hitherto the subject has been

NON-EUROPEAN ARCHITECTURE

neglected, but in so far as the principles of design are concerned, investigation shows that some degree of affinity exists. For the right understanding of Chinese architecture the essentials of building must now be examined.

The architecture of China, if only by reason of its antiquity and remoteness from classical civilization, presents the most interesting field of study.



CHINESE ARCHITECTURE

PAGODA OF HOUANG-HO-LO AT WUCHANG (NEAR HANKOW)

Tiered composition with sympathetic repetition of curved roofs at projections.

As early as the twenty-second century B.C., during the dynasty of Hia, Chinese historians mention the building of important public works. Under the Teheu in the twelfth century B.C. architectural rules for the construction of buildings were formulated. The spread of the teachings of Confucius at this period also favoured the development of architecture. The Great Wall of China, though strictly a military work of vast scale, must be considered to be a contribution to the art of building comparable to the works of the Pharaohs. The Khitai and the Mongols,

during their many invasions of Chinese territory, brought many sub-interests to bear on native art. It was not, however, until the second century B.C. that the Chinese, through contact with Turkestan, the Punjab and Afghanistan, became aware of Hellenistic methods of building. The propagation of Buddhism and the pilgrimages which ensued between China and India resulted in acceptance of Hellenic and Hindu interpretations of plastic forms. The chief characteristic of Chinese architecture, namely, the form of roofing which has persisted from the earliest times to the present day, owes its inception to the use of bamboo for constructional purposes. Another factor was the observance of magical (Fengshui) rules for the proportions that dominated the building of houses.

The Chinese palace, as in Egyptian architecture, followed the design of the lesser house on a larger scale. Close observance of the rules of regularity and symmetry, the rectangular grouping of buildings about an axis, and the repetition of sympathetic roofs form collectively the attributes of Chinese architecture of importance. Babylonian influence may be seen in the immense Taa or towers of many storeys, related to the ziggurats of Mesopotamia, examples of which are recorded in early Chinese paintings. Buildings for religious purposes comprise temples, monasteries and shrines, according to cults. The design of the pagoda, for instance, can be traced to ancient tiered structures akin to those of Chaldea. The form of the pagoda varies, from those with a continuous helical ramp to others of stepped shape, either cylindrical, square or octagonal. It has been stated that the most distinctive feature of Chinese architecture is the pagoda. Judging from the variety of the silhouettes in this type of building, as well as the ingenuity shown in the distribution of minor features, it is clear that a people so conservative attached great importance to those wonderful towers. The pagoda of Pa-Li-chwang, near Peking, is an outstanding example of the observance of traditional rules. The principles of design followed by the ancient Chinese architects for this and similar structures appear to be moderation in dimensions, regularity of plan and elevation, and a passion for fantastic details. The designs, however, always show that contrast was essential between the minor parts. This was arrived at either by increasing the size of a particular storey or by exaggerating the silhouette. The rectangular sanctuary of Van-Chou-Chan of two stages, the tower of Ling-Kauang-sheu near Peking, and the three-

tiered circular Temple of Heaven at Peking provide examples to show the diverse types.

Another aspect of Chinese architecture is connected with the design of triumphal gateways and arches. The timber origin of many of these works will be recognized by comparing the form of these in brick and stone with the simple wooden gateways still extant. The timber origin of Chinese architecture not only dictated many of the forms which have become secondary elements in this conservative style, but led to a perfection of carpentry admitting elaborate detail. A great architecture did not arise, but one compelling admiration by its picturesque quality became universal. The rules laid down by Hsieh Ho, an artist at the end of the fifth century A.D., although primarily intended for the observance of painters, affords a good index to the general principles of Chinese art. These famous "Six Canons" formed the basis of traditional methods: (1) Rhythmic vitality. (2) Anatomical structure. (3) Conformity with nature. (4) Suitability of colouring. (5) Artistic composition and grouping. (6) Copying of classical masterpieces. The Chinese tradition therefore owed its longevity and its permanence to the observance of these and similar principles. If the design of palaces and country houses retains elementary groupings, a different view must be taken of the truly ingenious garden formations. It was the development of the naturalistic style, in which natural scenery is repeated in miniature, that placed this branch of art in a category of its own.

It is not surprising that Japan should have been influenced by Chinese art, which is altogether of a much higher order. The style apparently was carried to Japan by Buddhist missionaries who crossed from Korea during the sixth century A.D. In the seventh and eighth centuries A.D., when the capital of Japan was Nara, the religious revival encouraged the building of temples and monasteries. The Chinese style was gradually modified to suit the new conditions. In the design of the sanctuary at Uji can be seen the best work of the period A.D. 898-1186. From this period until 1854, when the ports of Japan were opened to European merchants, the character of Japanese art retained its quiet dignity and restraint. As in the case of Chinese architecture, the development of carpentry led to a structural system which modified both the imported and indigenous architectural forms. Searching for other causations, it can be said that the volcanic nature of the soil determined the grouping and the construction of the larger edifices. In some cases shingle tiles

covered with copper or bark were used to reduce the weight on the side walls. The significance of the lowness of the horizontal buildings and the lightness of the vertical towers indicate precautions against earthquake. Reverting to the acceptances of Chinese forms, in the sixth century A.D., and the participation of Japanese architects in that style, here again is to be seen the dominance of predetermined form in architectural devisement.

In this brief study of Chinese and Japanese art an attempt has been made to explain the main features of a structural and decorative manner which has withstood the passing of centuries. It was natural that these two countries should in time influence the various states adjacent to their natural boundaries. The student has also to refer to the influence of the art of the peoples of the Indian Peninsula. The commingling of these influences, therefore, is the next consideration, particularly the lesson of the architecture of Burma. Indian art through its Buddhist penetration, as well as the arts of Thibet and China with their influences of intensive cults, were bound to be reflected in the architectural works of those sub-Asiatic nations with whom the dominant people traded.

Three types of Burmese buildings are representative of the interaction of the influences already formulated. The zedi, the monasteries and the temples contain all the attributes of reasoned and highly organized architecture. From these buildings can be gathered the fact that architectural laws are universal. The zedi or shrine must first be studied. The building is placed on a stepped podium which is sometimes square and at others polygonal. The bell-shaped stupa tapering to a gilded finial is frequently repeated at the four salient points on the surrounding platform. The majestic composition of the Ananda Temple at Pagan is derived from the same formula, with the addition of porches and innumerable pinnacles and miniature pointed domes. The theory of one dominant mass was well interpreted. In the design of the monasteries the nucleus of the composition is of the basilican type divided into a central space and aisles.

ANCIENT ARCHITECTURE OF PERU AND MEXICO

The architecture contributed by the Aztecs, foremost of the earliest tribes of Mexico, is not of outstanding importance. Their fine civilization, which extended over the greater part of what is now called Mexico, lasted until the conquest of Montezuma by Cortes. Apart from

the question of any connection between Asia, Mexico and Yucatan, the fact remains that the Aztecs were an agricultural people who developed a system of irrigation. Their religious ceremonies involved the sacrifice of human life. At stated intervals of fifty-two years, religious observances on the grand scale took place. Herein is to be seen an explanation of the platform structures of pyramidal form capped by a small temple. These pyramidal structures vary in size and the number of platforms, but in the majority of cases on the upper platform stands the square or rectangular temple. Many of these structures date from A.D. 1200-1500. These monuments or *teocallis*, the Houses of God, are found both in Mexico and Yucatan, the most important being that at Palenque. Other temple platforms found in Mexico and Central America consist of pyramids of steps at forty-five degrees with central stairways or double platforms. These structures recall the Mesopotamian ziggurats. Arches are of the Pelasgic type with corbelled sides, but the trabeated system of lintels and cylindrical supports was well understood. The most effective treatment of masonry, however, was reserved for the façades of the Royal palaces, as at Mitla. In this building the walls are battered upwards and outwards. Intricate geometrical patternings are introduced to enrich the surface of the stonework.

The ancient architecture of Peru belongs to the old civilization of the Incas. Rude stone circles are found by Lake Titicaca and megalithic buildings at Tiahuanaco. The Inca Empire flourished from A.D. 1000 till the conquest of Pizarro. It was during this period that the great monuments were built. The Incas possessed a good system of roads, and in their buildings showed a preference for large stones. In the great fortress of Sachai-Huaman, some of the monoliths are twenty feet high. The stonework was set without mortar and cut with copper tools. The style of the architecture is distinct and shows a preference for the trapezoidal opening or niche. The forms of stone temples vary from the rectangular to the circular, each being stepped. The temple Tambo at Mora consists of four stepped stone-built mounds, standing on one platform. This architecture does not attain to dramatic status, but should be considered as an expression of primitive civilization. These temples devoted to the Sun, the Moon and their "Unknown God," or the supreme spirit all-pervading, did not call for idols or human sacrifices. The species of fire worship then conducted was attended by the presence of vestal virgins.

Chapter 8

PICTURESQUE ARCHITECTURE

HITHERTO AN EXAMINATION OF conspicuous buildings associated with the highest expressions of past civilizations has been the object in view. It has been endeavoured to show that effects have been produced by causes extending over a long period and governed by the working of the intellect. The art of architecture, however, because it is the product of many factors, varies in direct ratio to the grades of society which it expresses. Each successive analysis of forms of architecture narrows the field of enquiry to certain basic principles which form the cells from which plastic effects are evolved. Therefore, the growth of the art within the frame of Antiquity, of Classicism, of Mediævalism and of the Renaissance, or within the complementary frame of the non-classical styles, has been dependent on progressive experimentation. From the remotest times down to the close of the eighteenth century the art of architecture in all countries was assured of a certain continuity of theme. Thus the observance of distinctive principles resulted in the formation of theories of design.

There are, however, certain aspects of architecture which seem to be independent of definite rules. Those peculiar forms of composition, for instance, which are apparent in the vernacular architecture of every country, which literary convenience has classed in the category of the picturesque, are therefore of attractive interest.

Although there must always be close association between monumental architecture and those works which constitute the bulk of the buildings of a nation and form the vernacular, it is to be conceded that both express different requirements.

The affinity between the monumental and the vernacular, however, is not disturbed by the intervention of the quality of the picturesque.

Indeed, in the latter attribute inheres the unbiased expression of national character crystallized into forms directly associated with the soil.

It can be ascertained that each country possesses a range of simple buildings inheriting local traditions and colour. It is also a fact that as civilization has developed, many of these products of humble building skill and craftsmanship have been obliterated. Hence, it is essential to study the manner of their devisement during successive periods and the nature of regional types.

The picturesque in architecture may be defined as the unsophisticated assembling of local materials in forms to harmonize with the landscape. This of itself implies observance of traditional methods, folk-lore and respect for climatic conditions. It can be said that it was the particular occupation of those concerned with the land that provided buildings suited to rural life.

In all countries, irrespective of national groupings, certain forms have been selected and perpetuated as being most suitable to practical requirements. It will be found that the same elementary principles regarding the roofing and grouping of domestic buildings are seldom departed from. Although there are minor diversities in the designs, they exhibit one common feature, namely, the logical assembling of material. It is the unpretentious effect of these buildings, so charmingly at peace with their surroundings, that makes the direct appeal to the æsthetic sense. The inspiration of picturesque architecture is explained by the spontaneity of the grouping. The various stages through which the picturesque has passed in its progress from the simple to the forced forms another chapter of architectural history.

To state in broad terms what the picturesque in architecture implies calls for a review of those buildings in Europe which can be classified as such. Among the chief characteristics of this informal manner of assembling local materials are those of asymmetrical grouping, accidental silhouette and colour values, the dominant factor being essentially the type of roof determined by climatic conditions. The importance of these principles and their persistence in all forms of vernacular architecture, irrespective of nationality, lead to the conclusion that traditional craftsmanship and methods of construction formed the basis of this manner. In England, for example, the prosperity of the Tudor period produced an outcrop of manor houses, farms, cottages and other domestic buildings. These tenements, although related to the parent stem of mediævalism,

were limited in expression by the dictates of local materials. The basis of these designs is the construction of the timber roofs, which can be followed from the cruck type of support, particularly in the case of barns and the offshoots to the same. The next feature of consequence, the great chimney, with its hearth, affords a clue to the genesis of structure around which a succession of apartments eventually developed. The framing of the roof by a gable with stone or brick, and the incorporation of the chimney stack as part of the external expression, was the natural sequence. As the principal living apartments grew in importance, so the services attached to them demanded separate treatment. The great tithe barns with their central spaces and aisles, recalling the plans of churches, vary from those of southern England to those stone-built structures of the Cotswolds and other types in the north and west of England. In Ireland the early stone cairns and coty houses eventually gave rise to the one-storeyed cabins with thatched roofs.

The use of timber of large scantlings, formed on sole pieces resting on low foundations of stone to protect the timber from rising damp, naturally brought the roof supports to the level of the ground. The intervention of gabled offshoots sympathetic to the form of the main building, as well as the addition of dormer features, produced an accidental silhouette. In the construction of the stone-built barns of the Midlands, the Cotswolds and other parts where timber was more sparingly used, the gable became the main feature. The subordination of timber in these cases is further explained by the use of split stone coverings for roofs. Prior to the seventeenth century thatch was used in many cases. A fine example of a stone-built mediæval tithe barn is to be found at Felmersham in Bedfordshire. At Fullstone in Kent there is one of the finest examples of timber construction. At St. Ives in Huntingdonshire, the brick-built barn belonging to the estate of Oliver Cromwell is well known. At Houghton Conquest in Bedfordshire, the great barn built of timber standing on a brick base, with brick nogging between the framing, is typical of late Tudor construction. The smaller houses range from those at Chiddingstone in Kent to Bletchingley in Surrey and Mayfield in Sussex. We turn, however, to Cheshire and the country forming the Welsh marches for the finest specimens of this branch of English architecture. By contrast, the Tudor inn follows the character of the small manor house, and sometimes the cottage is echoed in the ale-house on the heath. The range in this series varies

from The Feathers at Ludlow, a timber-framed house, to the seventeenth-century stone-built frontage of The Bell at Stilton, the chief difference between the domestic dwelling and the inn being the need to provide an entry to the courtyard and the stables. Hence, the development of those picturesque courts with galleries which provided the setting for strolling players and incidentally decided the form of the theatre of Shakespeare's time.

The picturesque quality in building relies as much on the treatment of detail as it does on the observance of mass. The regard paid to such diverse features as bay windows, entrance doors, projecting eaves, boldly grouped chimney stacks and dormers, as well as to window glazing, expresses the collaboration of kindred craftsmen.

Apart from those accidental compositions where accretions to the original structure have been allowed, the surprising *naïveté* of these humble buildings shows the selection and assembling of materials to have been wise. When ornament is introduced, it is used as an emphasis to construction. From the sixteenth to the close of the eighteenth century the continuity of mediæval methods of craftsmanship ensured a corresponding longevity to picturesque forms of building, especially in remote localities. What might be termed the survival of country types of building lasted until the Industrial Revolution had become firmly rooted. Picturesque architecture in England, apart from the ancient castles and buildings on heights, is closely related to the old country regions. For example, East Anglia is identified with the use of rubble walling, thatched and tiled roofs, as well as timber-framed buildings. Buildings of brick, and others finished with rough-cast, must also be considered. The Midland region has the fine stone tradition of Cotswold building, extending from Oxford to Stamford. In Devonshire and Cornwall the old red sandstone, together with granite, constitutes the chief material, with cob walls and thatched roofs as a variant to the small local slates for roof covering. It is characteristic of all picturesque building to be of diminutive scale and to merge inconspicuously into the surroundings. Such examples as the Star Inn, Alfriston, Sussex; The Mermaid at Rye, Sussex; and The Barley Mow, Clifton Hampden, Oxfordshire, belong to the traditions of the Middle Ages. The stone-built front of the Parish Room at Corfe, with its curved bay window and unusual roof, belongs to the period of the early eighteenth century and is of the type which might be termed unforced in design. Small thatched houses of the type of The

Coach and Horses at Wimborne, Dorset, are so essentially English and so typical in every southern county as to need no special comment other than to point the moral of local material.

The use of painted or tarred weather-boarding for cottages, farms, mills and small outbuildings, either singly or in groups, began in the seventeenth century and formed the basis of a distinctive manner of construction in the Home Counties, particularly in Essex, the reason being the lightness of the timber structure in view of the treacherous nature of the clayey soil. Even the small houses of the late seventeenth century retain a certain picturesque flavour in the treatment of the mullioned and transomed windows, the projection of the eaves and the variety of the materials employed, as at Framlingham in Suffolk. Here is to be seen an example with a bellcast to the eaves, a similar type existing at Goudhurst, Kent, where the vertical wall surfaces show tile hanging. One of the most pleasant groups is at Burwash in Sussex with brick and tile combined.

When the Romantic movement at the close of the eighteenth century favoured the ornamental cottage and the Park Lodge with thatch for the roofs, a perfect furore set in for semi-Gothic of artificial stamp. From William Halfpenny's exact designs of 1760 to the cottages built by Henry Holland at Woburn and at Southill in Bedfordshire, between 1794-1805, there is a marked progression towards the purely forced ornamental. At Ampthill, in 1815, many cottages built of brick nogging and roofed with thatch were erected for Lord Ossory. These can be cited as typical of the Romantic phase of the early nineteenth century.

Sir John Soane, at Wimpole in Cambridgeshire, and John Nash, in various parts of the country, both captivated the fancy of the wealthy by creating mock pastoral architecture. The result of this strange affectation in architectural design was the craze for sham ruins and Follies. Regarding the latter, those at Virginia Water are well known, and among the Follies can be quoted the tower overlooking Broadway, Worcestershire. Such adjuncts to domestic amenities as tea-rooms, gazebos and garden temples, belong alternatively to the serious side of architecture and to the pleasantries of the picturesque.

In the Alpine regions of France, Switzerland, Italy and Austria picturesque architecture is associated with the character of the small manors and farmsteads, and, as in other lands, its exploitation varies according to the region. While in some districts the steeply-pitched roof is retained, together with angle tourelles reminiscent of neighbouring châteaux,

the simplicity of the compositions is very striking. In the north of France, the Netherlandish influence was of long duration. Brick, tile, half-timber and rough-cast predominate for external treatments. In Normandy, half-timber structures recalling English associations are familiar; while in Brittany there is a distinctive manner of granite building. In the Basque districts low-pitched roofs of unequal spans suggest the proximity of the Pyrenees and Spanish traditions. The district in the neighbourhood of Toulouse, with its examples of brickwork, tourelles, external staircases and Roman tile roofings, is equally regional. The centre of France, particularly the Loire district, developed gabled buildings, with sparse fenestration and long bare walls. In Burgundy the houses, cottages and farms have a regional character varying from steep-pitched roofs, with round tourelles at the angles, external staircases and dormer windows in the roofs. The hip knob and the leaded cresting finish for the ridges recall mediæval tradition. In Provence white-washed walls of stone or brick with broadly projecting eaves, and corbels formed of tiles, constitute the chief attributes of the vernacular. The astonishing variety of these compositions varies from the façades formed in the rocky seclusion of Les Baux to the narrow windings of the streets of Sanges, Vaison or Martigues.

In the Franche Comté district the picturesque element is to be seen in the treatment of the isolated farms, and other small buildings in the Alpine villages. Low-pitched roofs of tile, with wide projecting eaves supported on timber struts and brackets, external stairways protected by the eaves, together with doorways opening on to hay lofts, granaries and sometimes stables, express these buildings to be self-contained units. The dictates of the climate, particularly snow and heavy rainfall, have determined the features that give the picturesque quality.

Chapter 9

THE DEVELOPMENT OF CONTEMPORARY ARCHITECTURE

IT IS A NATURAL LAW that the new should be continually evolving from the old, for stagnation in life means death, and in art decadence. Not only the preponderance of events but the various schools of philosophy which flourished in the nineteenth century were bound to have their repercussions in art. That brave outlook which was beginning to question repetition of themes already exhausted was gaining adherents. It was the doubting mood that led to new thought and eventually to an accession of new methods of construction. First painting, then sculpture explored new avenues for original expression. Architecture, however, was the last to awaken to contemporary requirements.

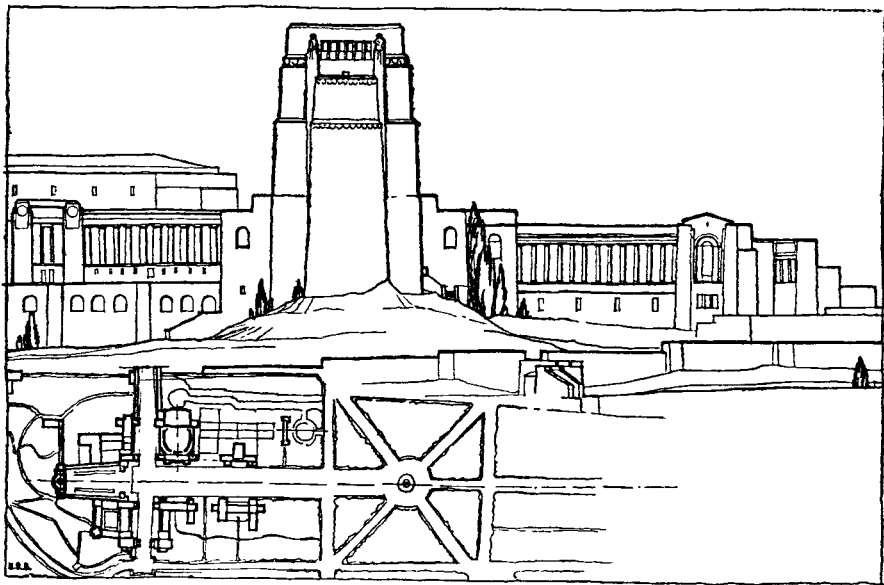
The immense change was scarcely recognized even by those who were responsible for the innovations. In point of fact, the theory of architecture was being transposed from that of mere observation and adaptation to the more relevant sphere of active creation. Freedom was sought for greater enquiry into the possibilities of new forms of structure and plastic expression.

The introduction of steel and reinforced concrete, with the possibilities of greater spans and slight supports carrying immense loads, had the effect of reversing the old rules. Long before the opening of the twentieth century the theory was established that the structural necessities of the plans should find expression in three dimensions.

The new school of thought found adepts in every civilized country. In France the theories of Viollet-le-Duc, based on the lessons of mediæval art, bore fruit. In America, the expression of structure centred on the development of the steel-framed building. The achievements of Louis Sullivan in the Guaranty Building in Buffalo, and in the design of

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the Transportation Building for the Chicago Exhibition of 1893, established the principle of encasing the members of the framed building. Sullivan's pupil, Frank Lloyd Wright, developed the theory of free planning, unique fenestration and boldly projecting eaves for small houses. In his churches he evolved an even more original treatment. In Austria the elderly Otto Wagner attempted a definite break with tradition. His numerous works in the neighbourhood of Vienna, though still bearing the



MODERN AMERICAN ARCHITECTURE

LIBERTY MEMORIAL, KANSAS CITY, MISSOURI, U.S.A.

(Competition scheme by BERTRAM GOODHUE, *Architect*)

Early attempt to modernize traditional classic themes. The plan is of the avenue type.

impress of classicism, are distinguished more for originality of detail than for new plastic forms. In France L'Art Nouveau, so typical of the opening years of the twentieth century, coincided with the exuberant fashion of the day which accompanied the Paris Exposition of 1900. Later on, the building of the theatre of the Champs Elysées by the Perret brothers showed the possibilities of original conception. In Germany such exponents as Behrens experimented in forms suggested by contemporary

designs of a similar character in England. The Turbine Factory of the General Electric Company, Berlin, built by Behrens in 1909, was a timid attempt in functional design. At that period the modernist movement in Germany attained great proportions. In Holland the departure from traditional forms of building coincided with the clearance of slum areas in the great cities. Scope was given to the architects to develop the treatment of brick buildings and to evolve new massings and groupings. In the works of De Klerk, Dudok, Jan Wils, De Bazel and Kramer can be seen the advances towards a new and restrained expression. In Belgium the architects Horta and Hankar were pioneers amongst their contemporaries, while the original attempts of Eliel Saarinen influenced the whole of architectural thought in Western Europe and America and caused direct echoes in Sweden and Denmark. It is, however, to the England of the first half of the nineteenth century that the historian must turn to appreciate how the new theories of construction were initiated.

The Great Exhibition of 1851 showed that iron and glass could be employed with considerable advantage for buildings of vast dimensions. The outcome of the ingenious construction of the Crystal Palace was the immediate adoption of the curvilinear roof of iron and glass for railway stations. Charing Cross and Cannon Street roofs were the earliest, and the great roof of St. Pancras by Barlow the latest example of this form of design. During the second half of the nineteenth century cast-iron and steel structures, girders and roof trusses, suited to great spans, were freely adopted as elements of construction for every type of commercial building. It is not surprising, therefore, to find elevations treated as stylistic veneers masking metallic framework. The Great Exhibition as a show was an admitted failure; the banality of the exhibits encouraged Ruskin and his followers to attempt to rescue the arts and crafts from complete submersion. The efforts of this group were not unsuccessful. The series of exhibitions held between 1862-1888, devoted to the improvement of the arts and crafts, effected beneficial changes in domestic architecture. The pioneer labours of Eden Nesfield, Norman Shaw, George Devey and Philip Webb were augmented by the efforts of Harrison Townsend, Mackintosh and Voysey. At the beginning of the twentieth century Sir Edwin Lutyens led the domestic school, and a new attitude towards civic architecture and town planning was in being. But having witnessed the genesis of what promised to be a remarkable

development, English architects were content to pursue the more radical course of indulging in revivals and imitations of Continental fashions.

The various innovations in the form of buildings so characteristic of the twentieth century, some brilliant and others indifferent, are symptomatic of reaction against forced revivals. It has come to be recognized that creation in art should be the real impulse, that the world we live in provides the resistance which is so essential to the evolution of new forms. But it should not be forgotten that art depends on the spiritual character of a period to a greater degree than to exact observance of prevalent material conditions.

The principles of architecture already described and discussed constitute the very basis of structural devisement, are in fact inseparable from the practice of architecture. Summarized they group into five main divisions, namely, disposition of masses, structural sympathy, sequence of contrasts or harmony, axial formation and finally dramatized characterization. Further, each and several of these divisions form the nucleus of design and in themselves are the entity of the law of continuity. The grand conception of architecture, which gives scope to the power of the imagination and rises serene above the dictates of fashion, belongs by right to the artist alone.

All modern buildings have common characteristics of structure and composition, differing only in purpose, size and relative quality. The conclusion can be formed that the whole gamut of design, as manifested in its various moods, is not only the result of predetermination but is the direct outcome of experience and knowledge of the past. The indestructibility of ideas, their propagation by successive generations, the inheritance of deep-rooted traditions, all belong to the theory of architectural devisement. To advance from this to something entirely new does not lie within the power of a single individual, although attempts have and will continue to be made to impose didactic formulæ on the mass mind.

In recent years there has developed the theory that building should be more closely allied to material considerations. The attempt to divorce architecture from its legitimate aspects of æsthetic value does not apprehend the full extent of the art. The appeal to emotion indubitably deserves even more consideration than an appeal which is confined entirely to the understanding. It is the dramatic forcefulness of the assemblage of parts that is convincing. The ornamental culture which

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belonged to the past made its own academic rulings and created its own peculiar canons of taste. These no longer apply in the same way. But, nevertheless, it is an undoubted fact that all advancement is dependable on continuity of thought. The modern attitude is the logical outcome of the thoughts and aims of the generation which immediately preceded the present one. The modifications of the original ideas current at the close of the nineteenth century are now in process. These modifications have been accelerated perhaps too rapidly to be generally understood as the outcome of previous experience. So far as can be judged from the present position of architecture, in every country there are two tendencies: the one that recognizes the claims of architecture as an art; and the other that attempts semi-engineering. It is the reckless abuse of the theory that buildings to-day should be machines for living and working in, without distinction, that is disquieting for the future of the art.

In a dispassionate study of the art of architecture there should be no issue between principles of buildings constructed of steel or reinforced concrete, and those formed of such materials as brick, stone or massed concrete, but only the need to consider each type for definite and specific circumstances. Once the principle of type of building and type of construction is grasped, the vexing question of a formula for all building will be settled for good. It is the appeal to the imagination and to logic that should be the main objective of the architect. From this will develop the invigorating of the art.

Industrial art should confine its expressions to relevant forms without invading the sphere of other legitimate expressions in architecture. The key, however, to all architecture worthy of the name is to be found in the composition of the plan. The universal laws which at all times have governed the process of architectural modelling embrace the disposition, divisions and subdivisions of sites, the correct emplacement of a building, the arrangement of entrances, the relation of areas that give light to the internal groupings and floor areas, and finally the co-ordination of the horizontal with the vertical circulations.

PRINCIPLES OF PLANNING

The principles which govern the art of planning are the same to-day as those which were followed in the past. The differences of construc-

tion and internal arrangement, however, belong to modern requirements and demand a new method of approach.

There are three main considerations: (a) the position of the site in its relation to civic planning; (b) the arrangement of the plan, whether for public or domestic purposes; (c) the layout of gardens and areas which are not to be built upon; the latter to be considered as complementing the plan if required. The numerous remains of plans, on the large scale, bequeathed by former ages in different parts of the world, give an accurate idea of former conditions. The earliest attempts at monumental treatment were confined to the approaches of temples, palaces and gateways. The Acropolis at Athens, for example, is to be considered as a type of free planning where the buildings have been adapted to the site for the best perspective results. On the other hand, the Roman Forum was the outcome of careful survey and balanced composition. From these two precedents can be deduced the axiom that irregularity of site favoured asymmetrical planning, while level sites almost invariably led to symmetrical patterns. Further, it has been ascertained that social life at any time prevalent is a determinant not only for the plans of towns, but for individual buildings. This is illustrated particularly by the changes brought about after the Middle Ages. Prior to this the indispensable belt of fortified walls encircling so many ancient cities caused them to be confined within narrow limits. Convenience and sanitation in the plans of early buildings were usually sacrificed, while to-day they are essential. Hygiene is an attribute in the devisement of almost every building.

It was during the Renaissance period, from the fifteenth to the eighteenth centuries, that studied planning and the layout of open spaces took on the character associated with the higher branches of civic art.

In planning it is the clarity and the unexpected interest which appeal to the intellect. But these qualities must be harmonized by an orderly arrangement of the subordinate parts. The requirements of all modern buildings vary and the realization of complex problems gives rise to groupings for which no direct precedent exists. In this the architect of to-day is confronted with the essentials of creative design.

It is therefore of value to state that all buildings must bear their own especial character and express the formation of the plan in the elevations and sections. But this concise and just expression can only be obtained by experience in handling different programmes and by the study of

similar types of buildings. These fundamental basic rules are now quasi universal, and the strong divergence of expression formerly so noticeable in the architecture of different regions is now less apparent, the reason being closer intercourse between nations and a wider diffusion of ideas.

The narrow theories that were formerly entertained are in these modern times almost extinct and a more catholic view of architectural composition is held. Hence it is found that the common acceptance of a general order of types of buildings, suited to the varied wants of a community, does not vary to any great extent. The conditions determining the types of buildings are, however, influenced by climate, material and local economies. Having once recognized this important fact, it remains to state the divisions of social activities which demand definite architectural interpretation; all buildings, therefore, may be included in the following category: housing, urban and rural; civic architecture and public services; industry and transport; education; public health; recreation and amusement; religion.

In a short sentence, the general principles which apply to all types of modern designs include clarity of purpose and unity of expression. By clarity is implied the solution of a problem in the simplest manner without the slightest trace of confusion. This power to select the dominant parts of a given problem and to give those parts relative value and proportional expression is rare. Great force, allied to extreme simplicity, especially the avoidance of intricacy, is the attribute of sound planning. By unity is meant observance of scale and the harmonizing of diverse elements and the control of the ensemble. This applies equally to the plan, elevation and section; in other words, the principal elements should read through ! The first consideration in devising a building is complete understanding of the programme of requirements, the second consideration being the possibilities of the site. From these premises the success of the project depends on the care given to the interpretation of the conditions in terms of plan. It must be remembered that there is the governing principle that two elements of differing importance cannot be expressed alike, neither in plan nor elevation. Given two elements in the planning allocated to different purposes, there must result differing expressions of area and volume. On the contrary, elements of equal value, such as two rooms for similar purposes, come within the category of repetitive units. Choice of site provides the

resistance which gives the project its ultimate formation. Hence the nature of plan composition which can only conform to one or other of two divisions, namely, the symmetrical or the asymmetrical. It is only by constant trial that one can arrive at a solution which is satisfactory. In this process of selection and elimination the eye no less than the mind is in operation. It is the alliance of the spiritual with the material that accounts for the afflatus which distinguishes the work of genius. The nucleus of a plan is closely associated with the arrangement and relationship of the principal parts. This means that the axes are determined by the grouping of the various elements in logical sequence to accord with the configuration of the site. In other words, the position of the axes should arise from the grouping of the elements in sympathy with the site. If it were not for this freedom of preliminary handling, the study of planning would be confined entirely to formulæ.

The most vital element in a plan is the circulation, which must form a complete circuit and lead to the vital points of the design. Therefore, the grouping of the staircases, lifts, vestibules and corridors must be well conceived. Obstructions in these circulations are to be avoided, and it is essential to provide introductory floor areas to all means of vertical communications. In other words, the general rule of enlarging the corridor space at these points should be observed. The value of internal perspective is proved by rooms designed to open the one from the other, of doors and windows axially placed, of fireplaces and other features subordinated to the volume and the internal arrangement of the apartments. Another aspect of internal perspective concerns the proportions of vestibules and staircase halls, which demand greater height than other elements in the plan. Although it may not be possible to vary the height of every cellular formation to suit the floor area, where height can be related to length and width, it is to be regarded as desirable. The introduction of internal areas or courts for the purpose of lighting inner arrangements at times may be necessary, in which case the superficial area of the lighting court must be more important than any one of the surrounding elements. Having theorized to this stage, the structural elements remain to be considered. The points of supporting and weight-distributing compounds must be articulated on the horizontal plane to express the method of span construction adopted for the void. The choice of vaulted or trabeated construction again reflects itself in the plan. It is therefore obvious that a well-devised plan is self-

explanatory, not only in giving destination of purpose, but explicit regarding the means of realization adopted by the designer.

Necessity sometimes forces the introduction of subsidiary floors arranged as intermediate stages between great apartments. Such may take the form of a mezzanine or a podium. In the latter case, in which the external approach is needed, the perron or external stairway should be considered purely as a decorative monumental feature. The above principles apply equally to a plan of compact formation or to one consisting of groups of buildings and their linking circulations.

Connected with the process of planning already described, and indeed indispensable to it, is the factor of the conceiving mind of the designer. Here is to be seen the value of experience arising from profound knowledge and understanding of the past, for such knowledge inspires invention.

GROUP PLANNING

In group planning the same principles of predominant and subordinate arrangement can be substantiated. The important masses or mass may be either axial and symmetrically placed or asymmetrically placed. In either case there should be balance and poise of grouping which finds its ultimate expression in the elevations. Obviously the silhouette of the plan determines not only the massing of the elevational grouping, but, what is even more vital, the piquancy of the outline. Another function of the designer is to wield a supervision over the whole project from the placing of the plan formation on the site to the final settlement of the main approaches and the entourage. The controlling principle in this case is the extension of the axial lines of the plan outwards to coalesce with the more open layout beyond. But this decision on the part of the designer has to be qualified with dexterous flexibility. In considering the external arrangements it must be borne in mind that important accessories, such as fountains, statuary, terraces, stairways and parterres, have a recognized sequence of placing in monumental planning and that the distant perspective should blend almost imperceptibly with the distant landscape. While the former principles apply to buildings on open sites with natural prospects, it will be clear that town sites do not offer such opportunities for grandiose display. When the relative importance of the two divisions is subjected to analysis, there remains for the building in the city the question of approach from the street as well as the need

to complement existing buildings of permanent character. The importance of this procedure has long been recognized, as can be seen from the by-laws which control such monumental groupings as the Place de la Concorde, and the Place de L'Opéra, Paris. In examining such an outstanding example as the Capitol at Rome we find the great axis leading to the main building, which is given first importance. The placing of this building on a podium with an external stairway contributes to the monumental effect. The balancing groups on either side of the main axis are not only kept at a lower level, but the treatment of the elevations is changed. This creates a valuable atmosphere of perspective. A similar regard for studied axiality and perspective is evidenced in Bernini's layout of the Piazza of St. Peter's at Rome. The planning of the great Palace of Versailles, with its immensity of layout, is perhaps the most instructive. For here can be seen the most perfect conventional adjustment of buildings to surroundings in the history of architecture. On the main front three great converging avenues lead to the immense Place d'Armes and the forecourt of the palace. On the park side the main axis of the building is prolonged to the horizon. The ancillary interests of terraces, fountains and statuary are planned near to the palace itself. Arising from this particular example is the question of the correct positioning of a great building in relation to points of vantage from whence the ensemble can be grouped at its best.

It is imperative that a building standing on a platform should not be placed too far back, otherwise the building will lose some of its majesty. Greenwich Hospital, with its splendid frontage to the river, no less than the dual grouping of the buildings against a rising background, can be cited as yet a further instance of the principles already mentioned. The great private palaces of the early eighteenth century in England, such as Blenheim and Castle Howard, afford similar examples. Finally, there is the plan of Somerset House, which, with the exception of the frontage to the Strand, fulfils all the desiderata of internal and external devisement.

The most consummate example of studied planning, on academic lines, is the formation of the Massimi Palace at Rome. Here the plans of the two houses are not only dissimilar in shape, but besides conforming to the slight curvature of the street, actually create a sense of orderly vistas when viewed from various positions. The manipulation of the main axis which is to be found in the principal portion of the Massimi Palace resulted from the nature of the site. The architect, Baldassare

Peruzzi, not only overcame a difficulty in planning, but actually affirmed the principle of flexibility in plastic architecture. The plans of the Stadthaus, Berlin, and the School of Engineering and Architecture at Stockholm are modern examples of this ingenious device.

Reverting to the subject of group plans, these may be classified as follows: (a) those arranged about the axes of main and subsidiary quadrangles; (b) those arranged on the sides of a main axis forming an avenue; (c) those following curvilinear formations, such as the fan-shaped or the radial type of layout.

In all grouped planning two objectives should be kept in view, arising in both cases from the treatment of the axes. These are either absolute rigidity of balance carried through to the elevational outlines of the masses, or, conversely, the plan with axial freedom where unexpected perspective effects are attained.

Whereas in the Middle Ages architecture gained piquancy from the accidental bias of the plan formation of a group of buildings, during the period of the High Renaissance monumental austerity was sought for.

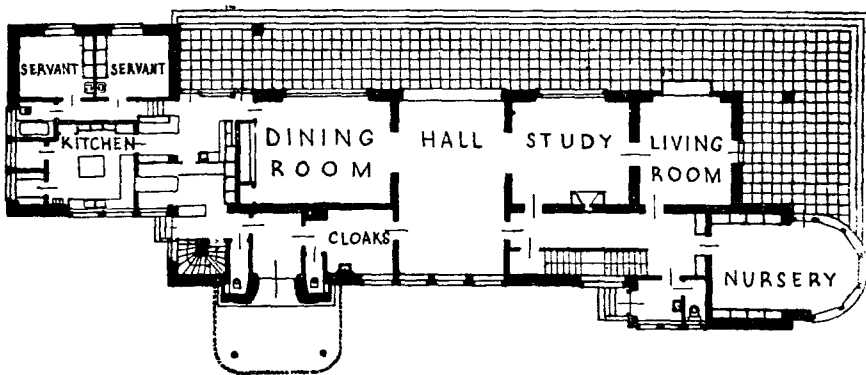
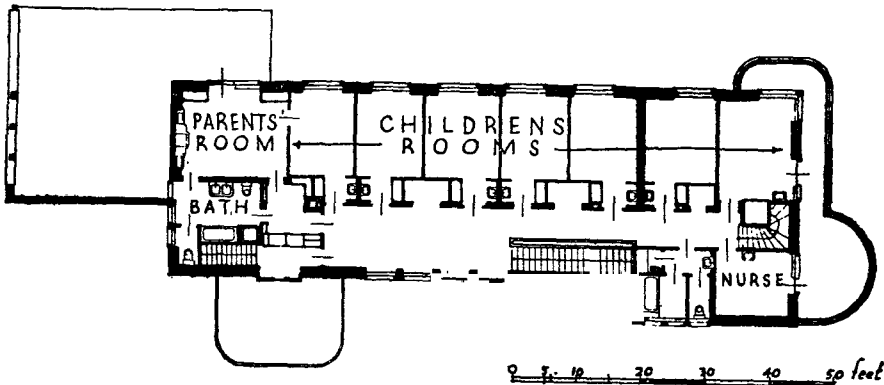
These facts show, what it would not be easy to demonstrate by ordinary analysis of lines and diagrams, that the great principles of planning are constant and that no legitimate advance in design is possible without their observance and incorporation. Every subject requires its own especial solution, as no two problems are alike, and, given the never-ceasing transformation of conditions of life, it becomes necessary continually to invent buildings anew. We are therefore forced to the conclusion that it is in the arrangement of detail rather than in departure from the basic principles of planning that variations will arise. In the practical matters of everyday planning alone we must expect results which will continue to be instructive. Amongst modern buildings the chief are those concerned with the daily lives of vast communities in great cities and towns. In the past the interests were localized at definite points in the formation of a city; to-day, owing to greater intensity of living, there is not only an increase in the number of problems to be solved, but the problems themselves are entirely new and specialized.

DOMESTIC ARCHITECTURE

The domestic dwelling in its formation demonstrates both continuity and evolution in design. From time immemorial it has been divided into three parts, namely, reception, sleeping and service quarters, the

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aim being to co-ordinate these subdivisions under a general scheme of privacy. This rule applies with equal force to the domestic buildings of to-day, ranging from cottages to houses of all types, and from these to community groupings, such as tenements and mansion flats. The principles of planning in all such cases resolve themselves into the grouping of the sleeping accommodation as distinct from the reception-



VILLA AT WEESEN
(ANTON HIGI, *Architect*)

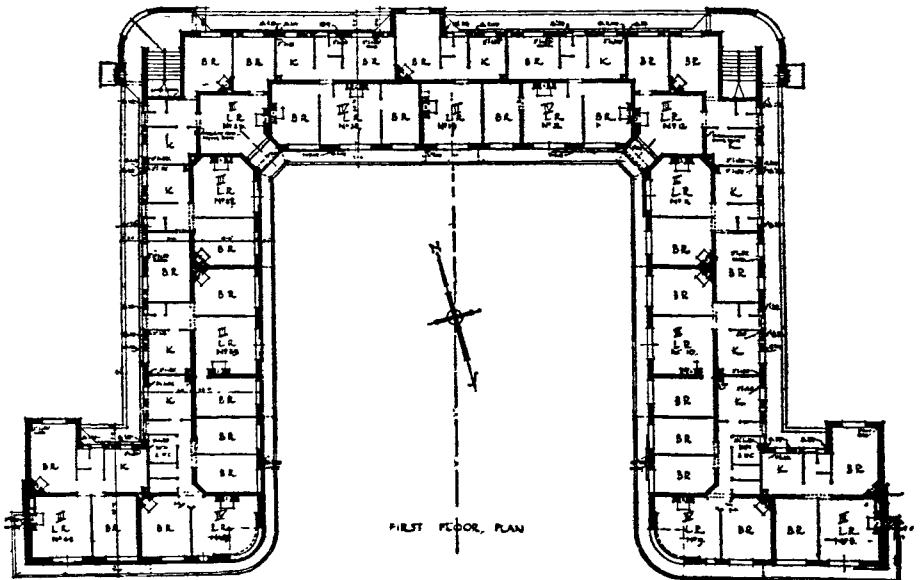
rooms, and the proximity of the service quarters to the latter. There are the further considerations of sanitary services and the need for private and trades entries. The chief difference between the private house and the apartment flat is, that whereas in the house the three main divisions may be distributed on different floors, in the case of the flat the accommodation is concentrated on to a limited area of floor space.

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Further, there is the economical reason for reduction of the height of apartments, which in turn has regulated the design of window openings. The lowering of the ceiling reduced the height of the window and necessitated widening the window opening to secure sufficient light.

HOTELS

Another phase of collective planning on a cellular basis concerns the grouping of hotel apartments. In these buildings, which vary in size



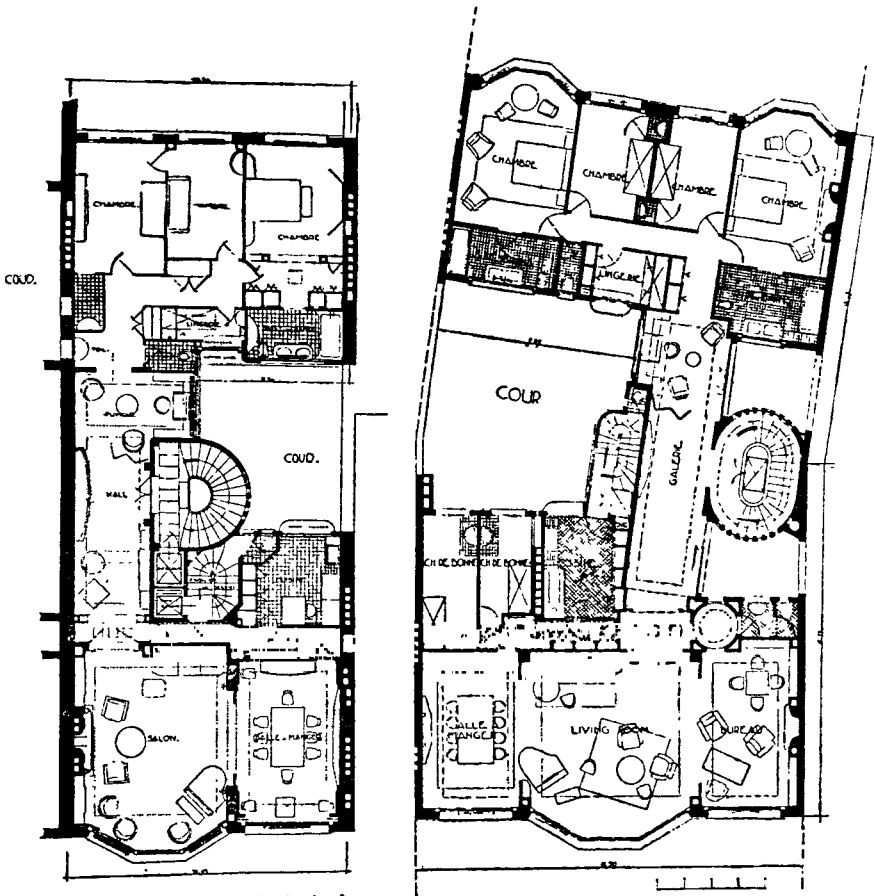
L.C.C. FLATS, OAKLANDS ESTATE, CLAPHAM PARK
(E. P. WHEELER, F.R.I.B.A., *Architect to L.C.C.*)

from the small private hotel to those of larger scale, the main divisions are those of reception, sleeping and service. The general principle observed is that of planning the sleeping accommodation as standardized units with adequate bath and toilet rooms on the upper floors; reserving the ground and first floors for the reception-rooms. The introduction of a mezzanine floor is sometimes advisable in order to take advantage of the heavy construction over the larger voids and to mask obtrusive structural features. The distribution of staircases and lifts at commanding points and the segregation of the staff quarters, also special approaches for vehicles and baggage, must be schemed.

THE DEVELOPMENT OF CONTEMPORARY ARCHITECTURE

CLUBS

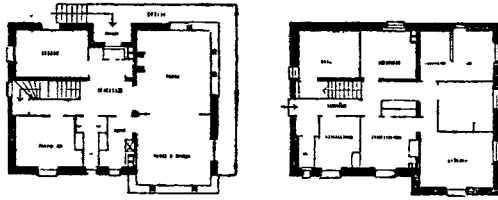
Proceeding to a discussion of clubs and similar buildings, the following accommodation is usually to be found, namely, vestibule, lounge, club-room, dining-rooms, library, writing and card-rooms, secretary's



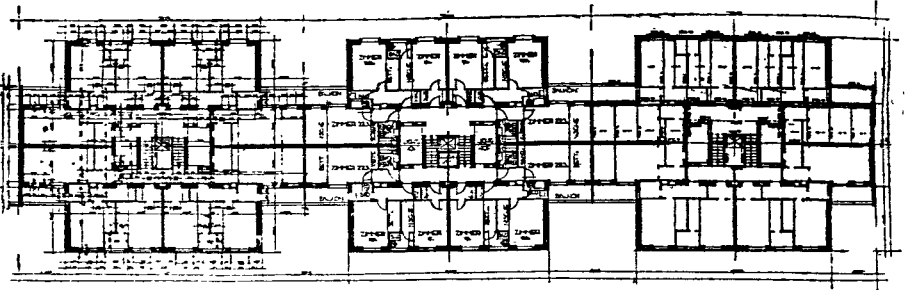
APARTMENT HOUSES, PARIS

(HUBERT RITTER, *Architect*)

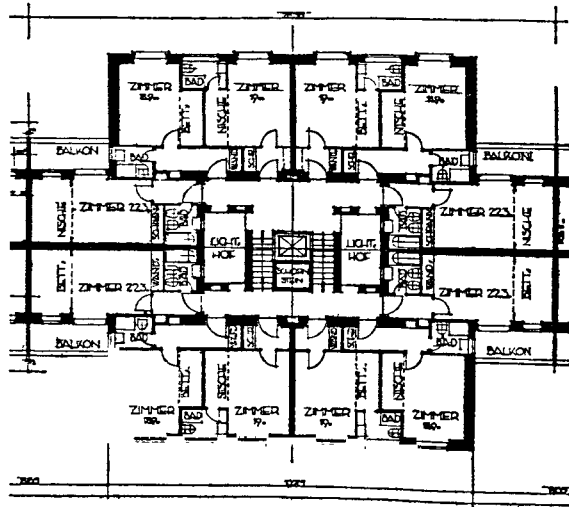
rooms and a limited number of bedrooms for members. Further space must be allowed for the kitchens and offices, as well as accommodation for the staff. The reception-rooms are given the best position on the ground and first floors, and their allocation and grouping entirely depend on the nature of the site. Usually a monumental staircase leads to the



SMALL HOUSE, MÈGÈVE
(H. LE MÈME, *Architect*)



APARTMENT HOUSE, BERLIN: GENERAL GROUPING



APARTMENT HOUSE, BERLIN: DETAIL OF PLAN
(ERIC MENDELSON, *Architect*)

important rooms on the first floor, but only when the latter are a feature of the design. As in the case of hotels, secondary and emergency staircases should be arranged at convenient points leading to the bedrooms. The especial character of the London club of the nineteenth century has been emulated in many cities.

PARLIAMENT HOUSES

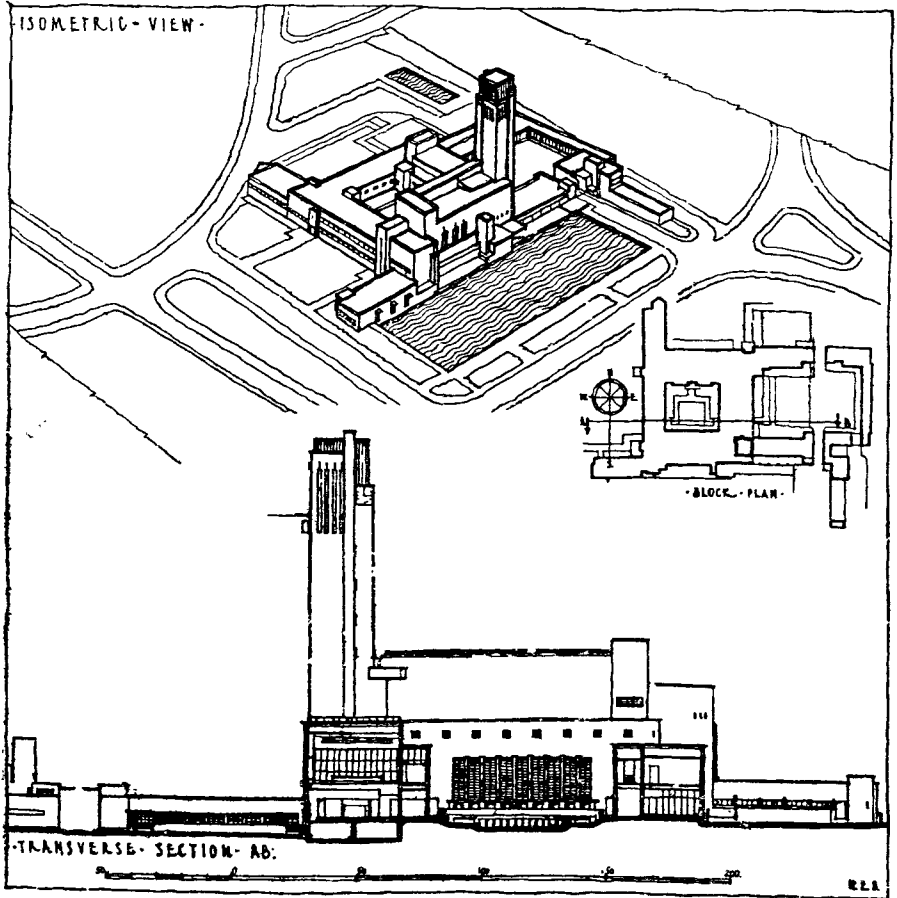
It should be borne in mind that a particular group of public buildings, such as parliament houses, town halls, law courts, as well as government and municipal offices, present so many facets which are analogous that similar principles of planning can be applied. It will, of course, be comprehended that different apartments in each type of building demand co-ordination into related groups as part of the working.

The planning of a parliament house depends entirely on the political constitution of the country for which the particular building is intended; as a primary consideration, whether or not two large halls for debate are required, or only one. There should be ample vestibules and a dominating lobby. A monumental staircase is necessary when the main rooms are on the upper floor, and full advantage should be taken of the adjoining corridors and vestibules to augment the scale. The Houses of Parliament take precedence of this type of building. Many designs of similar scope, including the plan of the parliament buildings at Vienna, have been based on this invention of Sir Charles Barry. At Westminster the nucleus of the plan consists of a monumental gallery leading to a central octagon. Two short galleries, one on either side of the centre, crossing the axis lead to lobbies at the respective upper and lower houses of legislature. This nucleus is framed by committee rooms, corridors and large internal courts.

TOWN HALLS

Such is the variety of town halls built in modern times that there is difficulty in stating the internal arrangements or in fixing definite rules. In general, the administrative departments are on the ground floor, the first floor being reserved for the state rooms, the council chamber and the committee rooms *en suite*. At Stockholm this process is reversed, the bulk of the building being occupied by the reception-rooms, which are on the grandest scale imaginable, while the various administrative departments are relegated to the uppermost storeys. The

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MODERN DUTCH ARCHITECTURE

HILVERSUM TOWN HALL, HOLLAND

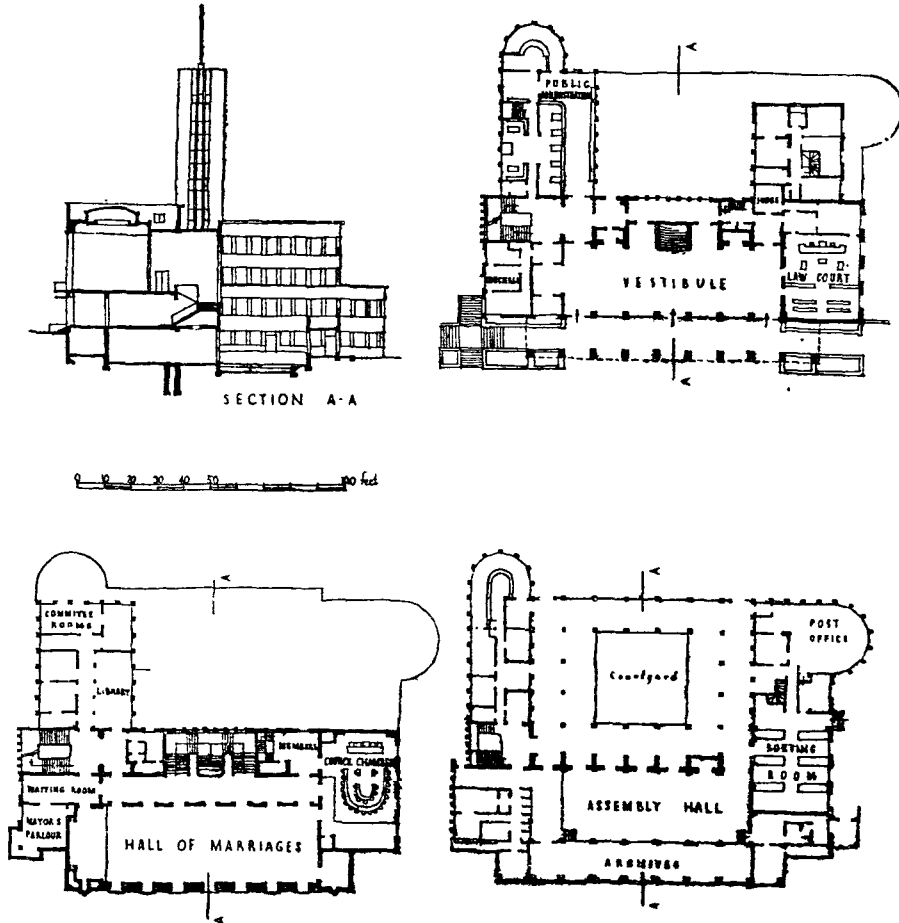
(DUDOK, *Architect*)

Romantic contrast of vertical and horizontal lines. The tower forms a climax in the composition. Gothic style of plan simplified to functional purposes.

famous Hôtel de Ville at Paris, which replaced the earlier one destroyed by fire in 1873, not only repeats features of Boccardo's sixteenth-century façade, but introduces a system of planning which deserves special study. The centre portion of the front of the building is occupied by the Salle des Fêtes, approached by a double staircase running parallel to this grand room on the courtyard side. By this arrangement prominence is given

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to the largest apartment externally, and at the same time the internal aspect is most suited to civic receptions. This plan, with its logical disposition of council chambers and committee rooms, embodies prin-



TOWN HALL AT CACHAN
(MATHON AND CHOLET, *Architects*)

ciples of planning which have not yet been surpassed. It is to be noticed that the internal circulations receive direct natural lighting from the three internal courts. By contrast the plan of the County Hall, London, fails, although certain features have been borrowed from the

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Paris example. In this case indecision regarding the axial approaches is manifest.

LIBRARIES AND MUSEUMS

Among other institutions of civic status can be classed libraries and museums. The library demands a just balance of accommodation for reading-rooms and for stack-rooms. The accommodation varies according to the importance of the building, but easy and direct approach to the reading-rooms from the main entrance and convenient supervision of these rooms, as well as a perfect service of books from the stock-rooms to the readers, determine the working of a plan. The circular reading-room at the British Museum, although designed at an early period, has provided the idea for many subsequent plans of libraries on the grand scale. At Washington the Library of Congress, and at Stockholm the new State Library, employ a similar idea, the difference in the case of the Stockholm example being that the decorative treatment of the circular reading-room is given entirely by the galleries of books. Thus the modernization of an earlier type of plan has been made the basis of development in this regard. An even more reasonable advance would be the placing of the stack-rooms below with artificial lighting and ventilation as an alternative to the erection of central towers of heavy construction to contain the books. Library designing should allow for reasonable extension. It is good practice to distribute the dead weight of book loads in stack-rooms rather than to concentrate the stacks in the form of towers involving heavy construction and the risk of settlement. This is mentioned because of the tendency to create a false character for library designs by the introduction of stack towers which have no legitimate *raison d'être*. The design of reading-rooms varies from the circular to the octagonal and the rectangular. The libraries of St. Geneviève, and the Ecole de Médecine, both in Paris, have established typical elevations for this class of design. Mention, however, must be made once more of the masterly design by Sir Christopher Wren for Trinity College Library at Cambridge, which confirms an elementary principle of planning.

MUSEUM AND GALLERY PLANNING

Museum and gallery planning belongs to the exhibition group in which the primary consideration is good lighting for the exhibits and

ample circulation for crowds of visitors. The types are three, namely, the long gallery, the large central hall with smaller rooms opening from it, and also the plan of the communicating walls framed around a central courtyard of vast size. One of the main considerations is that it should be possible to close for rearrangement of exhibits any portion of a museum without undue disturbance of visitors. In Paris the Musée Galliera offers an example of continuous circulation. In London both the National and Tate Galleries are in the same category. The plan of the British Museum, repeated on two floors, although altered since first built, is still noteworthy for its fine proportions and natural lighting. The design of the Fitzwilliam Museum at Cambridge, with its modern addition, can be cited as an example of a combined museum and picture gallery, embodying many modern features, such as top side and Seager lighting, and also subsidiary galleries for the display of water-colours.

LAW COURTS

In connection with the administration of the law, special types of buildings for civil and criminal trials are required; petty offences are heard in county and police courts. The judicial system varies from country to country; the fundamental requirements are outstandingly the same in all. Beginning with a large vestibule—which may be of immense dimensions, as at the Palais de Justice, Paris, or even the larger Palais de Justice at Brussels—the plan is developed as required, with special courts and rooms off these courts with other private communications for the judge and the jury, also rooms for the members of the Bar, the witnesses and litigants. In the case of criminal courts, accommodation is required for witnesses, police and offenders. In both cases provision must be made for the admittance of the public to all legal hearings. The design of the interiors of courts of law should be austere and impressive. The chief demands on the skill of the architect are first that the court itself should be well proportioned, and secondly that the acoustic properties should be considered. Both seeing well and hearing well are the essentials of good design in this regard. The court, which is the nucleus of the whole composition, is usually arranged in the case of English courts in the following manner: the raised bench is occupied by the judge and communicates directly with the judge's retiring-rooms; the box for the jury usually on the right hand of the judge, and between the two is the witness-box. Below the judge sits the clerk of the court,

and immediately behind is the accommodation for the barristers and the solicitors. In the case of criminal courts the enclosed dock is immediately behind the barristers and communicates direct to the cells below. Accommodation for the public is usually provided in a gallery or at the back of the court facing the proceedings. The number of courts within any one building varies according to the requirements of the programme. The site naturally influences the choice of plan to be adopted. If open or enclosed courtyards are to be introduced, it is preferable, as in any plan, to have the minimum number of areas. Here is evidenced the type of problem demanding skill in the arrangement of the axes and imagination in organizing internal vistas and perspective effects in the public halls and corridors.

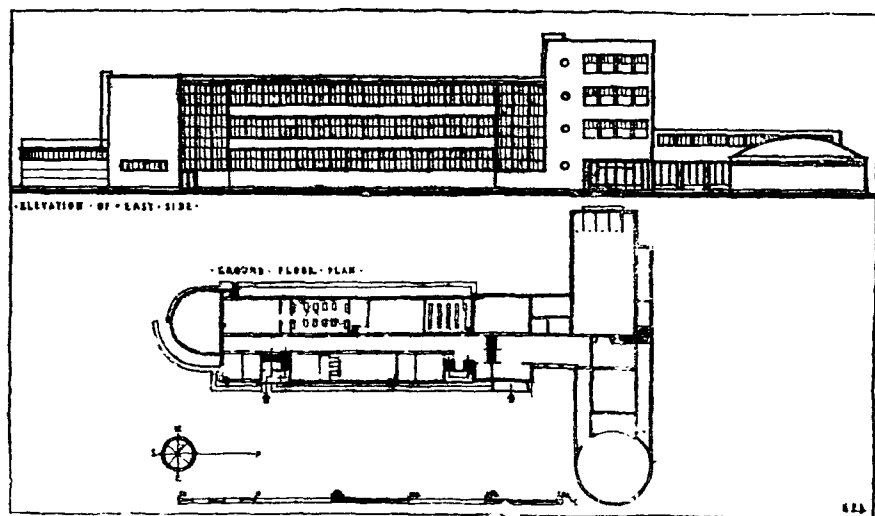
COLLEGE AND UNIVERSITY BUILDINGS

The extension of knowledge suited to modern needs has during the past century brought about many changes, as, for instance, the development from the mediæval collegiate system to that of university organizations on a great scale. The change in the planning of universities and schools is not only without precedent, but has engendered new theories regarding the type of accommodation most suitable for educational purposes. The Universities of Paris, Pisa, Padua and Oxford and Cambridge were the outcome of mediæval learning, in itself a compound of diverse interests. The buildings grouped round a quadrangle, sometimes cloistered, included chapel and library, hall, kitchens, masters' lodgings, students' chambers and rooms for the masters. A typical example is St. John's College, Cambridge, with its magnificent gateway from the street opening on to vistas of mellowed charm. Sometimes the hall and the chapel formed separate units. From this type of plan developed the great public-school plans of Eton and Winchester. The difference in growth between the development of university buildings in England and France is that whereas the Sorbonne in Paris has been almost entirely remodelled on the old site, at Oxford and Cambridge the older buildings have been preserved and new buildings erected on outlying sites as occasion demanded. While the preservation of pictorial amenities in these two centres of learning has a definite historical value, at the same time scope has been given for the erection of buildings more suited to the needs of to-day.

By contrast with the slow, indeterminate development of the older European universities, the new university foundations of America are

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designed as complete entities. Although less picturesque these latest expressions of architectural skill conform to rules of axuality and grouping which conduce to an impressive ensemble. Such is the case of the formal layout of Columbia University, where round a central axis, on which is placed the great library and the hall as detached and self-contained units, the subordinate buildings are framed round open quadrangles, each group of buildings being allocated to their respective divisions of teaching and research. A feature of the American University is the campus, which in



BUILDINGS FOR EDUCATIONAL PURPOSES

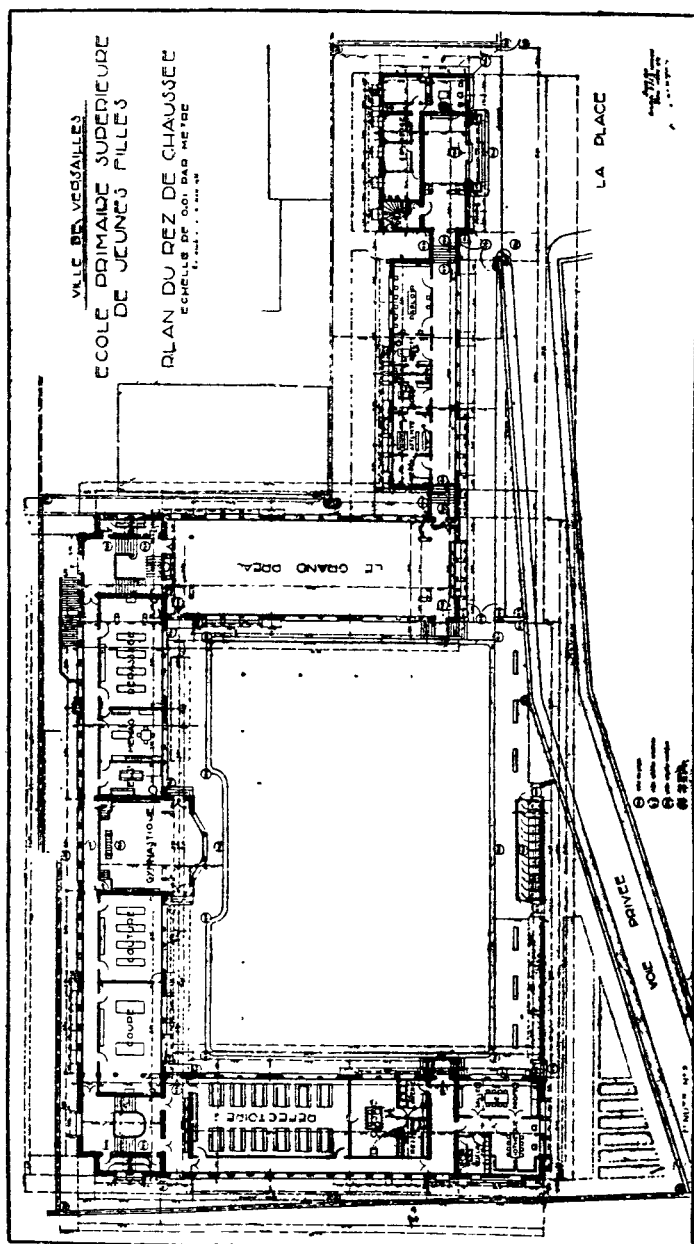
GIRLS' SCHOOL, FRANKFORT

(PROFESSOR MARTIN ELSAESSER, *Architect*)

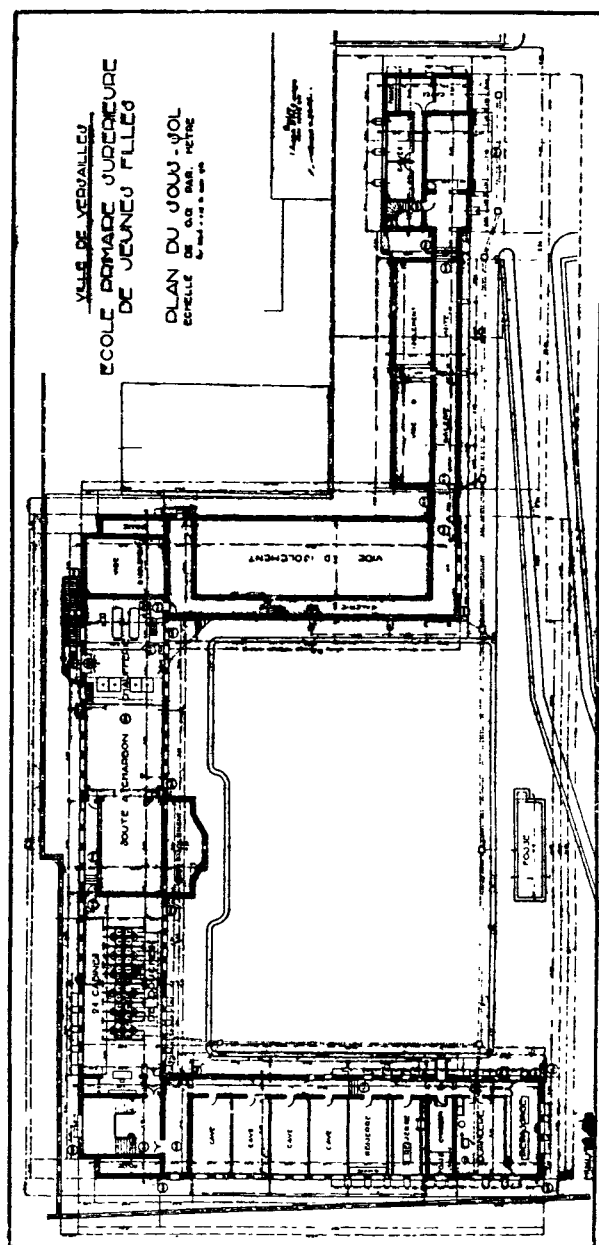
Plan designed for maximum of natural lighting.

reality is an enlargement of the cloistered growth of the Middle Ages. The Universities of California and Pittsburg reveal a form of grouping on the side of a hill where full advantage is taken of the differences of level and great ingenuity is shown in the axial arrangements. The application of the principle of approach by means of a circular framing road, beginning at the base of the site at California, recalls the famous Prix de Rome plan by Duquesne. Thus is furnished the value of academic theory in practice.

The Pittsburg University plan not only acknowledges the principles



SCHOOL FOR YOUNG GIRLS, VERSAILLES, FRANCE
(M. CAGNART DE MAILLY, *Architect*)
Ground Floor Plan.



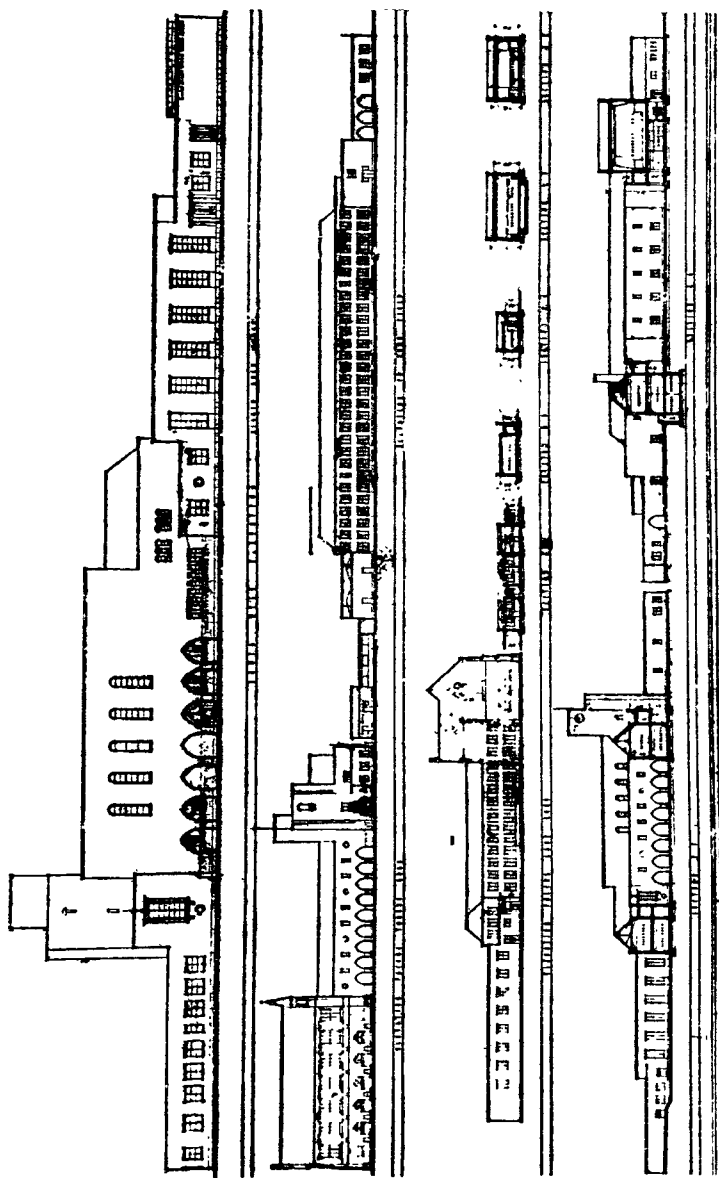
SCHOOL FOR YOUNG GIRLS, VERSAILLES, FRANCE
 (M. CAGNART DE MAILLY, *Architect*)
 Basement Plan.

of open grouping, but the localizing of these principles to the lesser parts of the design demonstrates the importance of sympathetic interrelation of the various subordinate groups. In all cases due importance has been given to imparting dignity of approach to these groups of special buildings.

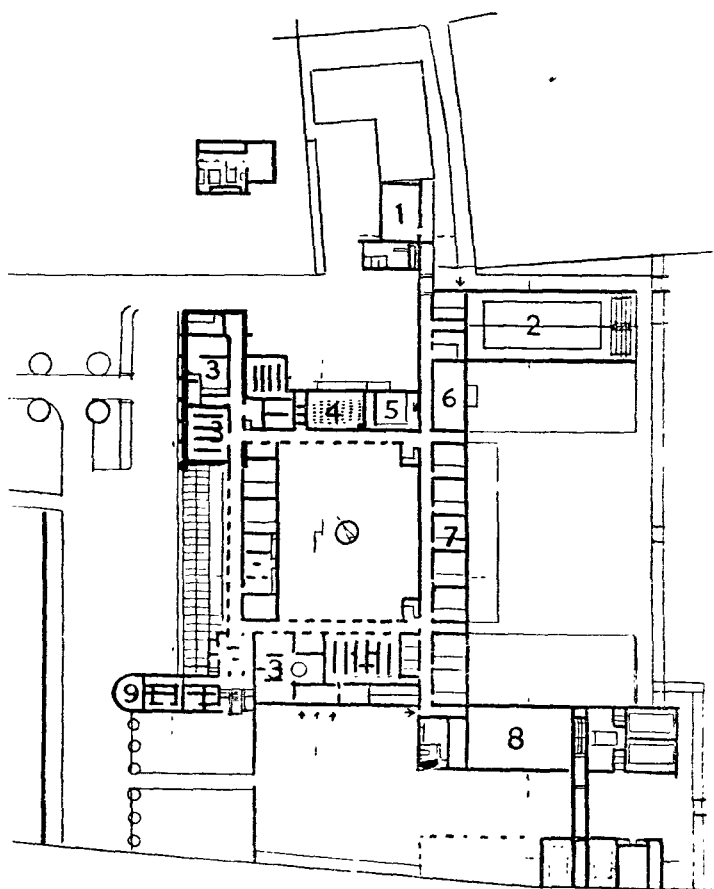
SCHOOLS

In England all classes of schools, both elementary and secondary, now come within the jurisdiction of the Government. There are in consequence definite rules regarding the orientation, ventilation, heating and seating capacity of the classrooms. The main elements in such compositions include the assembly hall, the dining-hall, gymnasium, craft-work rooms, classrooms and science rooms. The disposition of the plan not only depends on the selection of the site, but it is also usual to dispose the classrooms to the south-east or to the north-east. The chief principle of planning is to arrange all the classrooms to obtain good natural lighting and to place the circulating corridors on the other side. Classrooms with a central corridor are to be avoided. The volume of the classroom depends on the number of students accommodated. As a general rule, 150 cubic feet per scholar is a reasonable provision. By reducing the height of the circulating corridor natural cross ventilation and sunlight may be ensured. The foregoing remarks apply to schools of one storey built on open sites. In the case of town schools, staircases at salient points are essential, not only as vertical circulations, but for escape in emergency. The number of staircases, their width, height and construction are subject to regulations laid down by the Board of Education.

Modern boarding-schools are also subject to the same rules that apply to places of education of secondary status. The various houses are under the management of different house masters. The central portion of the school, however, including the assembly hall, the chapel and library, music, science and craft rooms can be treated as a detached block. If possible, covered connections between the central group and the various houses should be introduced. Swimming-baths, both open and closed, as well as boathouses and workshops, can be grouped as separate units in the layout. The head master's residence should be isolated and, in addition, there should be staff quarters for teachers not in charge of houses.



DONCASTER GRAMMAR SCHOOL
(J. R. LEATHART, F.R.I.B.A., *Architect*)



DONCASTER GRAMMAR SCHOOL
(J. R. LEATHART, F.R.I.B.A., *Architect*)

BANKS

Concerning the origin of public banks, these date from the establishment at Venice, in 1584, of the Banco di Rialto. The Bank of Amsterdam, founded in 1609, and the Bank of Hamburg, 1619, and the Riksbank in Sweden, 1656, represent the seventeenth-century aspect of the banking house. Although several small banks were founded in English towns towards the end of the seventeenth century, the proposal for the foundation of the Bank of England was not made until 1691. Down to 1732,

the financial transactions of the Bank of England were carried out at Grocers' Hall. During the eighteenth century the Bank developed from the original premises in Threadneedle Street to the unified monumental group of halls designed by Sir John Soane and enclosed within a screen wall. It is significant that the classic character thus evolved for a public institution of this magnitude was adopted almost universally in other countries. For example, the early banks in the United States of America were almost invariably of classic design. The extension of this semi-official character for banks, insurance offices and other business premises in cities during the nineteenth century, and with slight modifications down to the present time, proves the general acceptance of the theory that the façades should be treated in the monumental manner. The axiom that the exterior treatment should give an impression of security and permanence was also observed in the treatment of the interiors.

The design of the modern bank, however, presents a very different problem, for bank business has become more intricate. In fact, the organization of a bank and its branches requires great technical skill. The architectural side of the problem consists in the convenient planning of the various departments which constitute the organism of a bank, both from the standpoint of easy access for the customers and efficient business space and communications for the staff. A tradition has been established that corner sites are preferable for banking premises, although this is not always possible. The ground floor, which can be slightly raised above the level of the pavement, contains the banking-hall with its different counters, waiting-rooms, manager's and interviewing rooms, porter's box, public lifts and staircase to the other floors. The basement is usually devoted to safe deposits and strong rooms, the sub-basement being allocated for the heating and ventilating plant as well as for stores and workrooms for the engineering staff and cleaners. A mezzanine floor is sometimes introduced to accommodate extra staff, or the alternative of a gallery for massed secretarial duties is permissible. The first is usually occupied by the board and director's rooms, the suite for the general manager, and the departments for foreign exchange and loans. The upper floors are usually given up to the various departmental branches, such as trusteeship and the business of branch associations, etc. The topmost floors are given for the restaurant and staff recreation rooms, as well as for the caretaker's quarters.

On the ground floor top and side lighting are to be preferred for the banking space, special attention being given to the desks of the cashiers. All private interviewing rooms must be insulated for sound and placed conveniently. Access from the banking space to the basement by a special stairway and lifts for the books have to form part of the working arrangements.

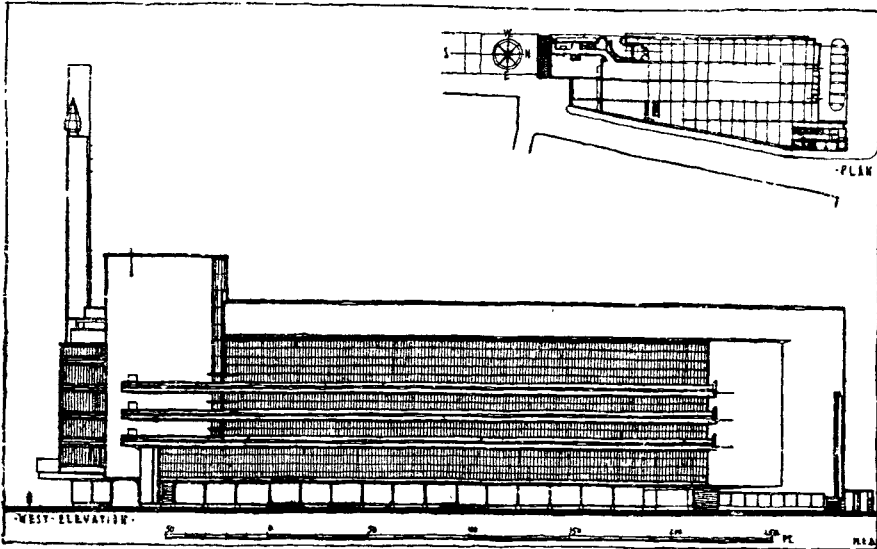
The governing principle of planning a bank of such magnitude is to impart a sense of spaciousness to the banking-hall, to preserve the scale of the interior and the entrance externally and to arrange for the vertical circulations for the use of the public to be not only unobtrusive, but attractive and easily recognized. The adoption of a glazed dome over the banking-hall is a feature often adopted and needs careful treatment. The finest example of recent years is beyond doubt the treatment of the banking-hall of the Société Générale in Paris. In England there are many examples of banks designed in the monumental manner. The selection of a classical style for the treatment of the interior or the exterior of a bank is purely arbitrary. It is the command of the planning requirements and their ordering into logical arrangement, as well as the observance of scale and suitable proportions arising out of the construction adopted, that should impart the ultimate expression. The system of planning stated above may be applied to all banks in England and the Colonies. On the Continent, however, different business methods have dictated a different layout of the ground-floor plan. In these a great hall for public use is often adopted with counters at the sides. Sometimes the centre of the hall is devoted to the clerks, as can be seen in the building of the Société Générale, Paris, already mentioned.

The farther the examination of types of modern buildings is carried the more striking appears the force and intensity of the civilization of to-day. We not only encounter the international spirit of Western thought, but we notice impulses for which little precedent exists. These forward movements have not only engendered new methods of construction, but have led to a reconsideration of æsthetic values in architectural expression. In the industrial sphere the changes are the most pronounced. While new forms especially suited to this particular branch of modern activity have been evolved, it must be realized that these forms do not constitute a rigid formula for all architecture. Non-realization of the fact that different problems in design demand a different æsthetic statement is bound to lead to stultification.

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INDUSTRIAL BUILDINGS

Industrial buildings comprise offices, stores, warehouses, breweries, docks and factories; many of these buildings belong to that division of architecture calling for the collaboration of the structural engineer. A general formula for the design of such buildings cannot be given. Economy of construction, type of span and the reduction of points of support to a minimum in number determine the type of design. The



COMMERCIAL ARCHITECTURE

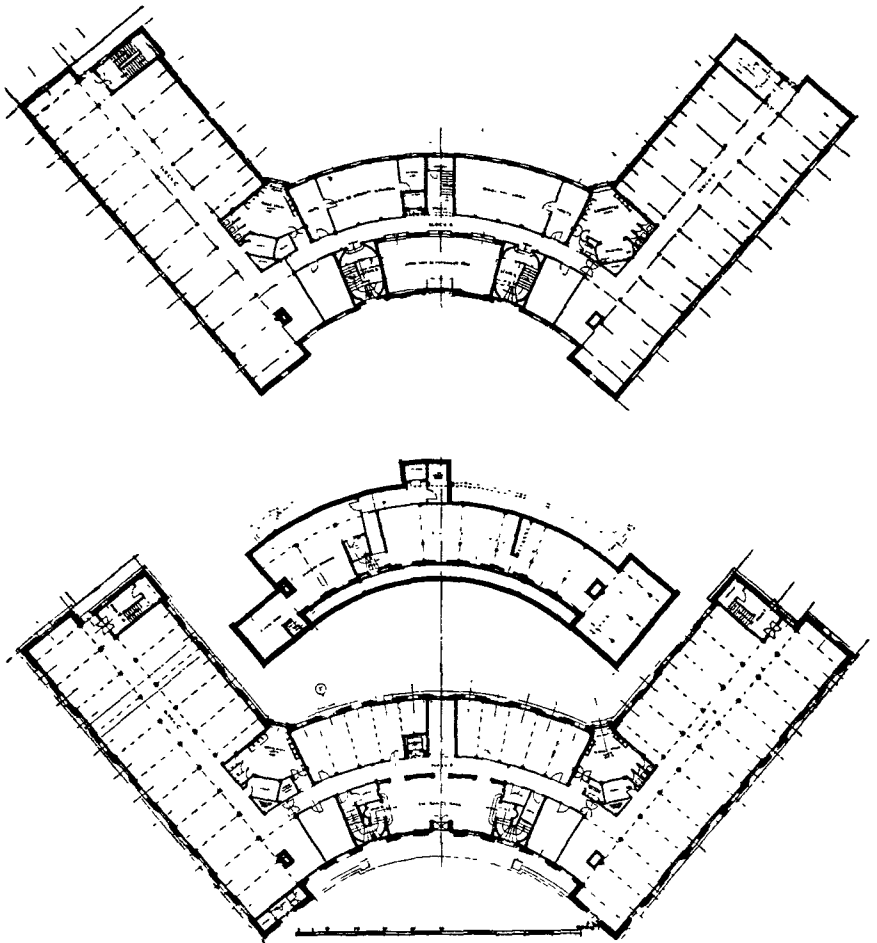
THE BIGENKORF AT ROTTERDAM

(DUDOK, *Architect*)

Plan consists of economical units expressed externally by continuous glazing. Predominance of voids over solids in elevation is a characteristic.

natural or artificial lighting of such schemes is likewise a determining factor in the outward effect. But notwithstanding these structural and definitely functional impositions, the character of the building rests entirely with the designer.

The design of factory buildings ranges from those of single-storey construction to those of several storeys in accordance with the Factory Act. The main principles governing the design are those of adequate working space and facilities for the reception of raw material and the



SOMERSET COUNTY OFFICES, TAUNTON
(E. VINCENT HARRIS, R.A., *Architect*)

dispatch of manufactured goods. Transport by road, rail and water is a consideration determining the selection of factory sites. The administrative offices should be kept apart, and also the amenities for the workers such as dining- and recreation-rooms. The question of suitable housing accommodation for a limited number of operatives on land in proximity to welfare centres is a natural sequence to the improved conditions of industry. The enterprise of Lord Leverhulme, of Messrs.

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Cadbury and of the Bata Boot Company in Czechoslovakia are instances. The provision of chemical research laboratories and drawing offices for the technical staff is also necessary.

OFFICE BUILDINGS

For office buildings in cities, where several business firms may have their headquarters, a certain type of design has been evolved. Bush House and many fine office blocks in the City of London can be cited. In New York and Chicago the evolution of the tower building of many storeys has led to the design of mammoth structures with setbacks at different levels in response to the zoning regulations. The skyscraper has been made possible, first by the existence of rocky subsoils, and secondly by the invention of the steel cable for the lifts. An office building should have an impressive entrance hall, a battery of lifts, slow and express, a main staircase and alternative means of escape by staircases suitably fireproofed. The totality of floor area for letting purposes is determined by the height from floor to ceiling, and also by the free arrangement of internal partitions and the disposition of lighting areas where same are introduced; a width averaging from fifty to sixty feet may be taken to include two rooms with a corridor of eight to ten feet in width between. The height of floors varies between ten to twelve feet. Lavatories for all floors are frequently placed either in towers, at different levels, or at the top of the building if the storeys do not exceed seven in number.

RAILWAY STATIONS

While the industrial movement of the early nineteenth century was revolutionizing social life and leading to world activity, the invention of mechanical transport brought new problems. The railway station, therefore, is the natural outcome of the new order of industrial grouping. From the standpoint of plan, it is entirely a product of the last century. The impending change from steam to electrical traction, which is inevitable, will affect to a certain extent the character of terminal stations.

The architectural problem is so largely bound up with the engineering aspect as to develop from the number of tracks and the disposition of the platforms. These factors are in turn the outcome of the volume of passenger and other traffic on any particular line. The principles of design begin with the provision of the concourse or assembly terrace at

the head of the platforms, which are grouped into arrival and departure platforms as may be determined. The ticket barriers from the concourse to the departure platforms are narrowed down for strict control of tickets. As the maximum per ordinary passenger train does not exceed five hundred persons, the control barrier system allows for gradual infiltration of passengers and luggage. The exits at terminal stations are left open, as tickets are usually collected *en route*. This procedure varies in different countries.

The booking-hall, waiting and refreshment rooms, luggage spaces, arrival and departure platforms, also the station offices, postal department and enquiry bureau have to be arranged off the concourse. The size and disposition of these subordinate units varies in accordance with the prominence of the terminal. One of the important factors in planning a railway terminus is the convenient planning of the roads for vehicles depositing or collecting passengers and their luggage. Hitherto the cab roads have been arranged on the sides of the arrival and departure platforms. The suggestion that a railway terminus should have platforms at different levels, as well as the segregation of vehicular and pedestrian traffic, has been brought a stage nearer by the development of electric traction.

The addition of board- and committee-rooms as well as administrative offices to form part of the terminal group is within the range of requirements. The allocation of floor space at higher levels away from the public halls and gangways is essential. The provision of first- and third-class waiting- and refreshment-rooms is a natural corollary to most schemes. Where a railway hotel is not in being, there should be a number of rest and changing-rooms with toilet saloons, a small shopping centre and offices for theatre, messenger and other agencies.

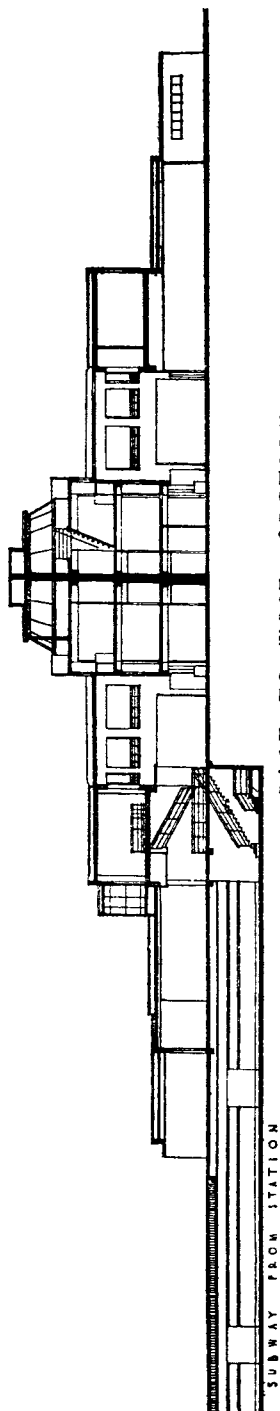
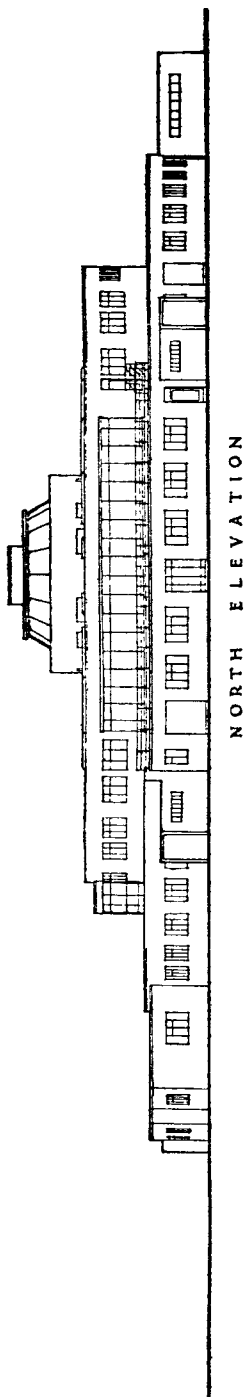
The requirements stated above find their expression in the elevational treatment of stations. In the future there will be less importance attached to immense shed roofs or to features not absolutely dictated by the essentials of efficient working. The just expression of the components of the plan will result in appropriate character being given to the exterior. All features which are excrescences and require frequent cleaning and repair should be avoided.

Historically the railway terminal belongs to the nineteenth century when steam transport was first brought into the heart of cities and towns. The earliest examples of station designs are found in England at the time

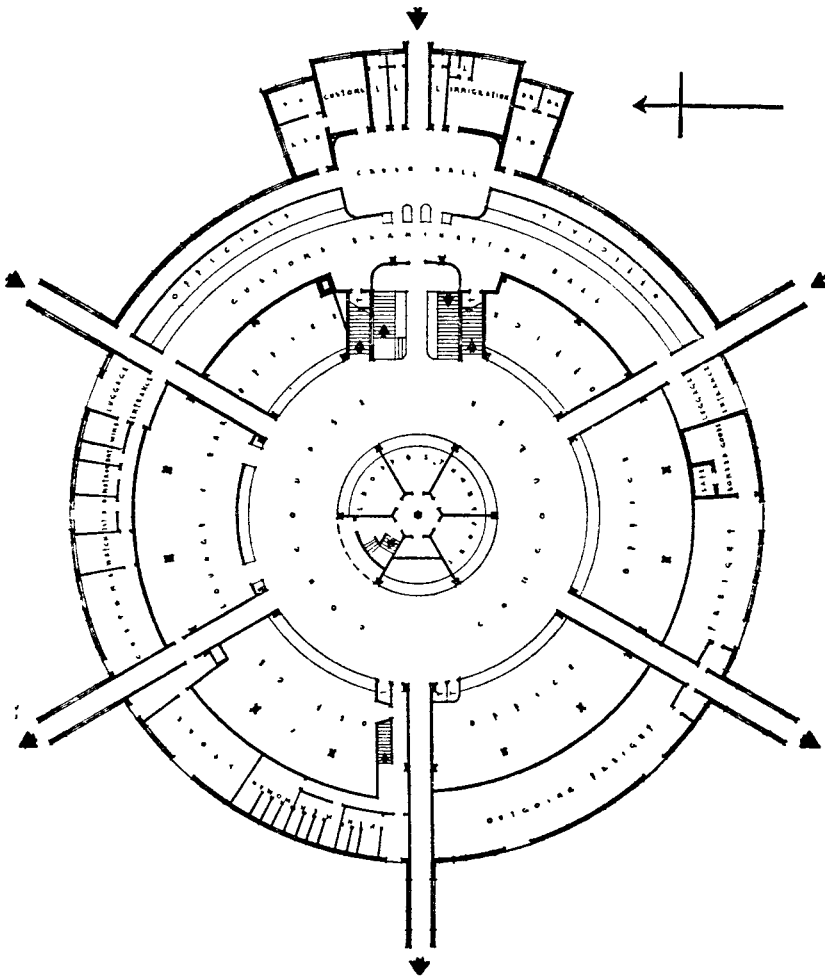
when English architects and engineers were considered to be pioneers. The station at Euston, with its longitudinal shed roof over the platforms, provided the model for the Victorian country station. The adoption of cast iron and steel for roofs of large span following the erection of the Crystal Palace in Hyde Park led to the erection of the vaulted iron and glass roof at Paddington from the designs of Brunel. In 1854 the twin curvilinear roofs were designed by Cubitt for King's Cross. Barlow's great steel glass vault at St. Pancras not only inspired other constructions of similar type in England, such as the Central at Manchester, but led to the adoption of similar forms in America and on the Continent. In the 'eighties the railway mania of an earlier period was succeeded by a period of slow and steady development, with few new lines or buildings under construction in Great Britain.

In France the Gare du Nord, Paris, by Hittorff, an immense stone façade featuring examples of the Pæstum Doric order with impressive arches and pediments, terminates simple straight-sided iron and glass sheds. This station is one of the finest erected at that period. The Gare de Perrache at Lyons dating from the 'fifties of the last century is noteworthy for the ramped approaches and the classical character of the elevations. Other stations in France, such as the Orleans Station on the Quai d'Orsay, Paris, belong to the period when the vaulted roof for some prominent part of the plan was still thought to be right. This type was emulated for many years. The new station at Le Havre is not only the most up-to-date, but the front portion is eminently satisfactory as an example of recent architectural design. The rectangular character of the fenestration, the simplicity of the detail, no less than the perfect finish of the material, distinguish this work as being of the first rank. Germany can offer the new station at Stuttgart as a contribution to architectural history. This building, designed by Paul Bonatz, is justly famous for its stone facings, but fine as the construction is in its exposition of masonry, it is the dramatic quality of the design that is really impressive. For example, the great piazza of rectangular piers, and the contrast afforded by the arched openings at each extremity shows the value of logic and artistry in design.

In Finland the new station at Helsingfors by Eliel Saarinen develops the vaulted roof as a method of external expression. The introduction of a clock tower and of minor pavilions is a concession to the canons of picturesque grouping. While the massing of the design has the freedom



GATWICK MARTELLO AIR STATION
(HOAR, MARLOW AND LOVETT, A.A.R.I.B.A., *Architects*)



GATWICK MARTELLO AIR STATION
(HOAR, MARLOW AND LOVETT, A.A.R.I.B.A., *Architects*)

of mediæval emplacement, the handling of the detail belongs entirely to the twentieth century. There is a strong German influence in the profiling of the details and in the contours of the silhouette. The force of the design inheres in the masterly adjustment of the parts, especially the joining of the public portion of the station to the administrative buildings at the side.

America can show several fine monumental stations, the most famous

being the Pennsylvania, New York. Here the theme is that of a great Roman bath; the internal perspective effects are undeniable and the external elevations express scholarship and novelty of composition. The railroad is relegated to a position below ground, and with the exception of the steel roofing over one portion of the plan there is little indication of the main purpose of the structure. That such a gigantic composition is impressive and affords space for the display of coloured maps on the walls and ample room for circulation on the pavements of the various halls, is not to be denied. The Central Station at New York, with its great vaulted hall and clarity of internal arrangement, is a fitting corollary to the aims of the Ecole des Beaux-Arts a quarter of a century ago. The same remarks apply to the new station at Geneva.

Finally, reference must be made to the tube stations of London, Paris, New York, Berlin and Moscow. The problem in every case is practically the same. The purpose of these stations is to provide booking-halls, lifts and moving stairways below ground and to provide access to platforms at a great depth below the surface. The provision of shops and showcases is now deemed essential. In London and Paris, in addition to stations built on corner sites others have been formed under the roads. The adoption of stairways opening out of wide pavements is now generally accepted as being not only simple, but the least assertive of the methods of dealing with this specialized problem.

THEATRES

One of the most fascinating problems in architecture is the design of the theatre. The earliest theatres were those formed on the hillsides in Greece, and according to Pausanias that at Epidauros was perfect in its acoustics. The Roman theatre differed from the Greek, the internal tiers of seats being built up and masked externally by high walls. At Aspendos the stage was formed with a background. The development of the permanent background continued through the period of the Roman Empire, and at Orange it is seen in its most complete form. After the fall of the Roman Empire the theatre had no fixed abode. The mystery plays of the Middle Ages alone kept the spirit of play-acting alive, plays being staged either within churches and cathedrals or in their vicinity. As time went on the players set up their platforms in the public square, or the inn yard, sometimes using the floor of a stage wagon for the performance. With the revival of learning it became usual to

arrange masques and classical plays or allegories within the halls of princely mansions. It was not until towards the close of the fifteenth century that the first indoor public performance was given at Perugia. The scenery was painted on the walls of the background. At the beginning of the sixteenth century Baldassare Peruzzi prepared similar scenery for a dramatic performance in Rome. The invention of perspective scenery forming part of a complete theatre interior was due to Palladio, who, in 1580, designed the Academy of Olympians at Vicenza. This was completed by his son Scillo in 1584. When Aleotti designed the theatre at Parma in the early seventeenth century, he initiated the horseshoe form of plan for auditoria and the picture frame for the proscenium opening. This innovation was followed throughout Europe down to modern times, the most famous example being the Opera, Paris, by Charles Garnier. In the meantime the development of balconies in tiers, to increase the seating capacity, had been the subject of study by the English and French architects; for example, Henry Holland at Drury Lane, and later Sir Charles Barry for the Opera House, Covent Garden, on the English side, while in France the celebrated theatre at Bordeaux by Victor Louis and the theatre at Versailles by Gabriel, created exemplars for French practice.

The introduction of boxes in circular formation, characteristic of Italy in the eighteenth century, represented social conditions when the boxes were regarded as private rooms for receptions. In the meantime attempts were made from time to time to improve the sight lines to enable spectators to have a clear view of the stage from the tiers, and also to eliminate the number of vertical supports carrying the tiers. At St. Petersburg the introduction of sloping tiers of seats and a sloping floor at the pit level marked a further change from tradition.

Types of modern theatres include the opera house, the theatre for the city, the repertory theatre, the music hall, the open-air theatre, and finally the cinema, the design of which has become so specialized during recent years.

The stage will be recognized as all important in the design of a theatre. Not only must there be ample space for working, but great depth for visual effects, and provision for erecting and dismantling all types of stage scenery. To-day electrical appliances have solved many problems of lighting and working. For example, the stage floor can be designed as a series of lifts running across the full width of the proscenium opening.

The dimensions of a stage will vary according to the size of the house and the nature of the site. Provision must be made for easy circulation at the back and sides of the stage to the dressing-rooms, green room, scenery dock and property store, thence to the paint room and the stage door; and, according to the size of the theatre, rooms for music, dancing and minor rehearsals. Regarding the stage, the following are essentials: The working or fly gallery with its pin rails for fastening the ropes manipulating the drop scenery. This gallery must be kept well clear of the proscenium opening. The grid at the top of the stage is generally kept at a level corresponding to twice the height of the proscenium plus five feet. Over the stage at the roof-level is the large skylight which is compulsory. This is intended to provide a vent for flames and smoke should fire break out behind the safety curtain. All circulation framing the stage at the back of the auditorium must be made fireproof and kept separate with adequate vertical staircases. Most modern stage designs include the circular back wall which serves the purpose of a permanent horizon. The possibilities of lighting effects with this type of circular background are illimitable. A series of lifts or movable platforms may be arranged as part of the stage. Often a movable stage can be added in front of the footlights to connect the main stage with the gangways in the auditorium. The orchestral pit is usually placed under the projecting apron of the stage itself.

The planning of an auditorium is controlled by accessibility from the street. The number of approach and exit staircases from the various levels, therefore, should be considered as integral to the main vestibule which contains the box office, and at the same time should have their own doorways, both externally and internally.

Experience has shown that the fan shaped auditorium is excellent both for acoustics and for sight lines. The Munich Art Theatre provides a striking example of the principle of fan-shaped seating arranged on one sloping plain. The Prince Regent Theatre at Munich shows another version of the same idea, the fan shape resulting from the converging side walls.

In planning a theatre two vestibules, or one vestibule and a foyer, are essential. The cloak space should be as conspicuous as possible and so arranged as to avoid crowding at the close of a performance. Both the Art Theatre and the Prince Regent Theatre, Munich, and also at the Schauspielhaus at Dresden, are classical examples of theatre planning.

THE DEVELOPMENT OF CONTEMPORARY ARCHITECTURE

The planning and provision of circulating corridors, gangways, staircases and emergency exits is dependent entirely on the size of a theatre and also on the requirements stipulated by local authorities.

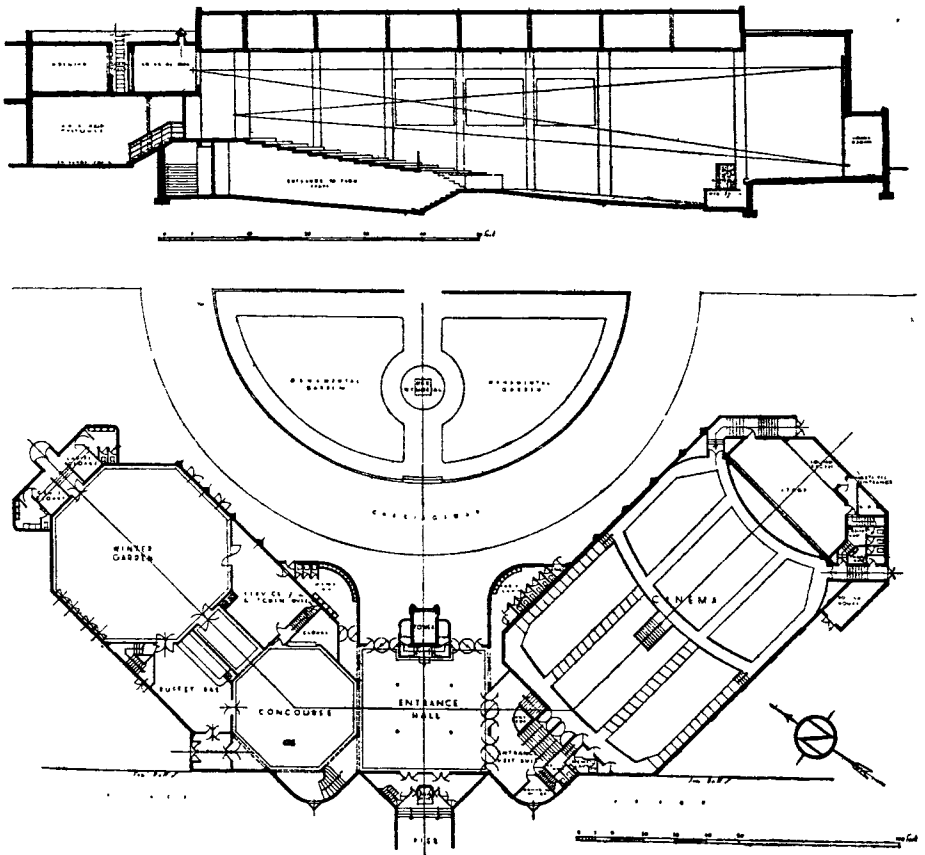
Down to the beginning of the twentieth century tradition was strictly followed in the design of the plans and elevations of most European theatres. Such buildings, while allowing scope for all types of surface decoration, frequently masked the internal arrangements. An advance was made in Paris when the Perret brothers built the theatre of the Champs Élysées. The reticent treatment of the elevations not only indicates the levels within and system of construction adopted, but represents the influence of classical study.

CINEMAS

The cinema represents a development from the theatre, with the difference of a modified stage. In some cases, however, where the house is intended for variety performances, the stage is retained with all its working appliances. The large cinema of to-day is usually built to accommodate the spectators on two levels. There should be a large vestibule with ticket offices and cloakrooms on the ground floor. One or two staircases of monumental scale leading to the first-floor foyer and the refreshment-room when the latter is situated on the first floor.

The auditorium should be designed with all seats directly facing the screen, preferably in fan formation, the depth of the hall not exceeding one hundred and twenty feet to ensure perfect visibility from every seat. At the same time the individual seats must be staggered to allow spectators to see between the heads of those in front. The floor also must be sloped, the inclination being determined by the size of the house and the sight lines. A slope of one foot in twelve has been found suitable in some cases. The balcony generally takes a segmental form in plan. The operating-box, which must be fireproof, with external communication and independent escape stairway, is placed in a position which varies between fifty and one hundred and twenty feet from the picture screen. The screen itself must be slightly inclined to avoid distortion. The light rays from the cinematograph should pass clear of all persons standing at the most unfavourable point. The size of the screen varies from twelve to twenty feet. The treatment of the proscenium as a frontispiece with the organ pipes on either side should be considered as complementing the ensemble. That is to say, walls,

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NEW PIER BUILDINGS, LEE-ON-SOLENT
(YATES, COOK AND DARBYSHIRE, *Architects*)

ceiling and balcony should be brought into harmonic unity. Heating and ventilation demand special attention in view of the large and constantly changing audience. Car park accommodation is essential.

The synchronization of light and sound has again introduced a new factor in the treatment of acoustics for cinemas, especially the need for sound-amplifying instruments, which are distributed at different points in the auditorium, each calculated to serve a definite section of the spectators. A new principle of cinema design has recently been adopted for the cinema Victor Hugo, in Paris, which promises to become more widely applied. The floor slopes away from the picture screen, the

THE DEVELOPMENT OF CONTEMPORARY ARCHITECTURE

seats being placed at right angles to the slope of the floor. Not only is a more comfortable angle of sight obtained, but the audience is less easily tired. With this the steeply raked balcony almost disappears and the light rays from the operator's box are more normal in their relation to the plane of the screen itself. The elevational treatment of the cinema should express primarily the entrance or entrances, the first-floor amenities such as the foyer or the refreshment-room, and the scale of the interior. Few modern buildings afford such scope for the designer to express direct purpose in terms of material.

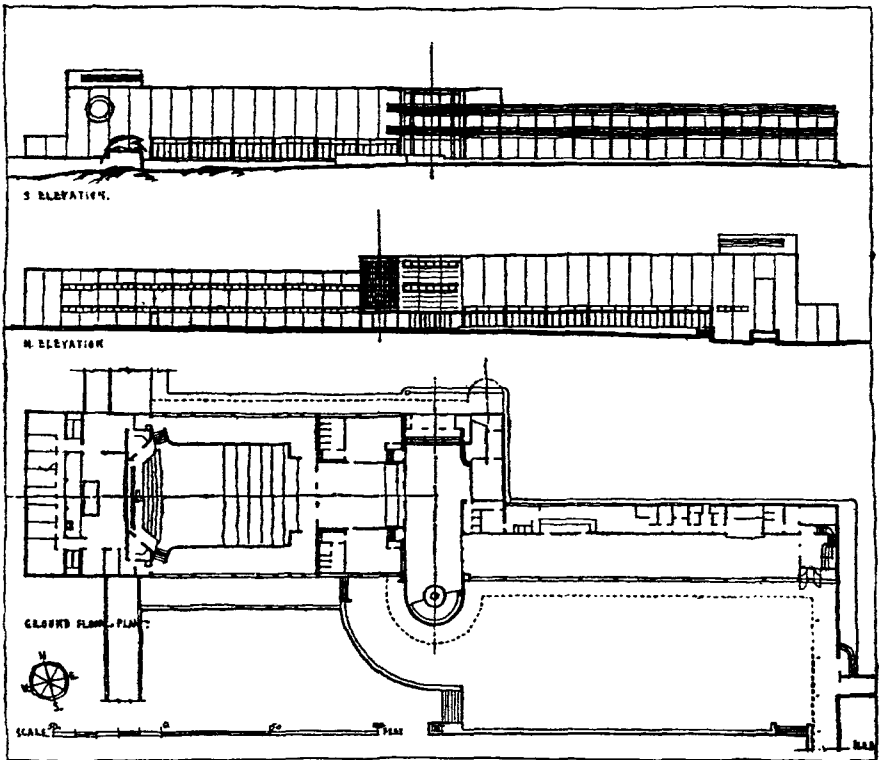
CONCERT-HALLS

The concert-hall, although within the category of theatres and auditoria already analysed, presents another problem in that it is destined for sound. Further, it is imperative that both individual artists as well as bands of musicians should be seen in action. Concert-halls are required for solo entertainments, for choirs and for the performance of oratorios. The problem of acoustics is of the first importance. The extent to which the study of this subject can determine the form of an auditorium is instanced in the superb interior of the Salle Pleyel in Paris. The shape of the ceiling and the incorporation of the platform within the longitudinal curvature of the ceiling, in order that the sound may be equally distributed to or under the balconies, has been carried to fulfilment in this case. Another consideration is the insulation of a concert-hall from external noises. The elimination of points of support and the insistence upon an interior freed from projections prove the efficiency of modern plastic form which results from a recognition of requirements. The exterior of the Salle Pleyel not only expresses the purpose and character of the building, but demonstrates the value of study and scholarship.

ACOUSTICS

Arising from the introduction of three, four and sometimes five tiers of galleries, the problem of acoustics became a serious one. Not only the great height of auditoria, but the cavernous spaces under the balconies created bad acoustics. Thanks, however, to the valuable experiments and researches of Professor Sabine, theatres and other places of entertainment can now be designed acoustically. The ultimate shape of a theatre or a concert-hall, therefore, is determined by two factors: (a) the seating capacity; (b) the acoustics. Whereas (a) determines the

volume of the auditorium, (*b*) dictates the shape of the internal section. The common fault in most auditoria is either excess or lack of reverberation. Professor Watson has evolved a formula which gives the right amount of reverberation required for a certain volume.



BUILDINGS FOR ENTERTAINMENT

DE LA WARR PAVILION, BEXHILL-ON-SEA

(MENDELSON and CHERMAYEFF, *Architects*)

Plan grouped to offer maximum development to sea front.

Good acoustics in a hall depend not only on the dimensions of the hall, but also on its shape and materials used. Sound waves are transmitted directly from their source, and may be reflected, absorbed or refracted. Direct sound is transmitted by the air at a speed of 1,075 feet per second, but if transmitted by other materials such as brick or metal its velocity increases to 11,900 feet and 16,000 feet respectively. The farther from its original source the larger the wave becomes, the increase being pro-

portionate to the square of the distance. At the same time its energy diminishes in a reversed proportion. For experimental purposes it has been found that in a room padded with cotton-wool ensuring complete absorption of sound the human voice is not audible beyond the distance of about thirty-four feet. In large auditoria, therefore, it will be found necessary that sound waves should be strengthened near their source of origin by convenient reflecting surfaces. Care, however, should be taken that the difference of time between the original sound wave and the reflected one as received by the individual does not exceed one-fifteenth of a second, as confusion may arise. The depth of a platform therefore should not exceed thirty-five feet approximately. At the same time the difference between waves direct and reflected as perceived by any member of the audience should not exceed sixty to seventy feet. It is obvious, therefore, that near the source of sound, wave-reflecting surfaces should be conveniently designed, directing sound waves to all parts of the auditorium, galleries, etc. Diagrams in plan and section will easily determine the most convenient shapes, remembering that the angle of incidence equals the angle of reflection.

It happens, however, that another phenomenon, that of interference, may occur due to the superimposition of two sound waves, or of sound waves originating from different sources. Interference, however, depends on waves having similar period and amplitude. Interference causing sometimes complete neutralization, or silence at certain spots, may be obviated by avoiding curvilinear forms or using deep coffers in the ceiling according to the case. Echo and excessive reverberation may be remedied either by reducing the volume of the auditorium or by increasing the absorbent surfaces, especially those farther away from the source of sound.

While Watson's formula determines the period of reverberation desirable, that of Professor Sabine— $T = \frac{0.05V}{a}$ (T equals time, V, volume cubic feet, a , coefficient of absorption) determines the actual reverberation in a hall when it is easy to adjust the design in order to obtain the desirable period of reverberation. The latter varies for speech, music or speech and music combined.

Dr. E. G. Richardson gives three formulæ which, by determining the amount of absorbing acoustic units required in a given hall, simplifies the architect's preliminary work. These formulæ are:

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$$A\ U = 1,000 + 0.033 \times V \quad \text{for Speech}$$

$$A\ U = 1,000 + 0.0225 \times V \quad \text{for Music}$$

$$A\ U = 1,000 + 0.027 \times V \quad \text{for Music and Speech,}$$

(V = volume of room in cubic feet.)

(A U = acoustic units required.)

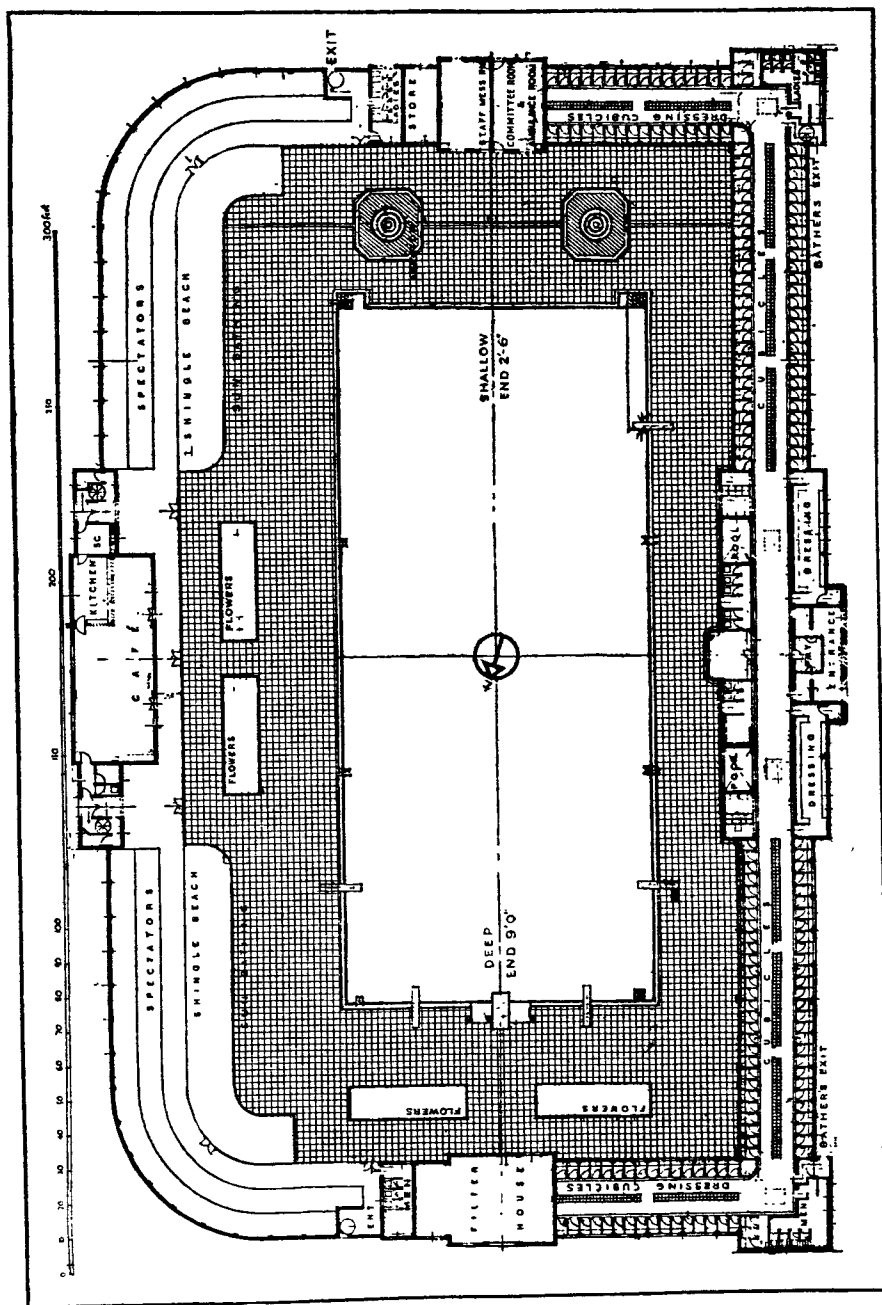
As acoustics may be influenced from sources outside the auditorium or hall, the materials used in the construction should have good insulation properties of a minimum of 50 S.U.

Interference from outside sources may be also due to sound penetrating through the usual openings, windows, doors and vents, which, therefore, should be carefully designed and placed at convenient spots. The avoidance of walls and partitions having a drumming effect is also desirable, as they may create undesirable resonance. The designer, however, must safeguard himself against such other defects as sound confusion by avoiding concave reflecting surfaces and distortion of sound due to uncontrolled resonance or selectivity in absorption.

From the above it is apparent that there are other conditions than pure æsthetics which regulate the design of an auditorium; Leonardo da Vinci's "Science is a frame within which art moves" in this case is more than true.

SWIMMING-POOLS AND BATHS

The planning and design of public and private swimming-baths, both covered and open, are within the sphere of modern architectural practice. Such projects are features of social life in great cities and towns, and should be regarded as recreational centres. There is, moreover, the analogy of the great baths of ancient Rome, which arose at the command of the emperors to meet the social conditions of antiquity. The main factors which dictate the layout of baths and swimming-pools are those of accommodation for bathers and for spectators. The swimming-pool must be of adequate dimensions for aquatic contests and sports. For championship purposes the size of swimming-pools is usually taken to be one hundred and forty feet in length by forty-eight in breadth. A minimum length of one hundred feet in length by forty-two in breadth can be taken for ordinary purposes. The section of the pool ranges from three feet to three feet six at the shallow end for non-swimmers to a depth of nine feet for diving purposes. High diving requires greater depth. The floor of the pool usually slopes from the shallow to the



RECREATIONAL ARCHITECTURE

Open-air bathing establishment comprising central bath, cubicles, stands for spectators, sun-bathing benches, café, etc., etc. An example of balanced planning.

(H. A. ROWBOTHAM, A.R.I.B.A., and T. L. SMITHSON, L.R.I.B.A., *Architects*)

deep end, but it can be varied according to special circumstances. At the diving end the terrace should be increased in width. The planning of dressing-boxes for both sexes, of slipper and shower baths, lavatories, cloakrooms, towel offices, laundry, refreshment-rooms, offices, etc., depends on the nature of the project and the character of the site. In some cases clubrooms and a gymnasium can be introduced together with changing- and games-rooms. The placing of the entrances to segregate the bathers from the spectators, and the need to ensure both a wet and a dry circulation on the various terraces and surrounds, are also of importance. The more technical requirements such as water purification, pumps for filling, and in the case of closed baths heating apparatus for winter use, call for special study. The external character of open-air swimming-pools is usually given by the treatment of the enclosing screen walls and the position of the entrances. The stand for spectators can be covered with a concrete or iron and glass roof, or left open as desired.

The covered bath apart from the dimensions of the swimming-pool presents an entirely different problem.

Public swimming-baths now contain one bathing-pool for both sexes. Separate days are allocated if the bath is to be used by one sex at a time. The general principle is a pool surrounded by dressing-boxes. The spectators are usually accommodated in galleries over the boxes. Refreshment-rooms can be introduced as desired. The roofing can be either of steel or of reinforced concrete, and its form varies according to the span and the inclusion of the galleries. The first consideration is freedom for vertical supports with an uninterrupted view of the pool from all parts of the interior. The cross-section through a bath is determined by the type of roof cruck selected. This can either be of semi-circular form with stepped sidelights, or of the double cantilever type with lateral lighting and a flat ceiling. Advantage is often taken of the position of the dressing-rooms to strengthen the construction of the crucks and at the same time to economize material. In some cases the introduction of a tower is permissible and the inclusion of the boiler flue as part of the construction is legitimate. In connection with sports centres it is important to consider such features as stadia and stands for spectators.

RACE-COURSE STANDS

The plastic form of a public stand for almost any phase of sport is determined by the number of spectators to be accommodated. Ample

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entrances and exits with space for the freest circulation are the first essentials. The spacious character of the race-course stands at Newmarket can be taken as examples of dimensions. As there is need for protection from the weather, the cantilever principle of construction has been evolved. The effect of a large chair is expressed by the section through almost any stand. The seats are arranged to a stepped form and covered by a cantilevered canopy, which is tailed beyond the structure of the steps. This not only provides space, circulating corridors, stairs and rooms at different levels, but dictates the scale and expression of the back elevation. Externally the treatment of the elevation, away from the course, provides scope for numerous openings which can be contrasted with expanses of plain surface.

ECCLESIASTICAL ARCHITECTURE

Church architecture, no matter what denomination is under review, presents a noble study of artistic inspiration and endeavour. The design of the cathedral represents an enlargement of the parish church or of the smallest chapel, the chief factor in every case being an unobstructed view of the altar and the pulpit. The manner in which the forms of religious architecture have been brought about are mainly due to methods of construction and to æsthetic influences outside the immediate sphere of religion. This explains the changes that took place in Europe during the sixteenth century. At the present time it is significant that church architecture is seeking emancipation from mere imitation of historical styles. The search for structural truths, the fresh investigation of materials, the imposition of economic factors, each and severally constitute salutary reasons for change. The manner in which this search is conducted admits of a dual process, either to base church designs on historical precedent as in the case of the Sacré-Cœur, Paris, and Liverpool or Westminster cathedrals, or, conversely, to plan edifices which are satisfactory for the conduct of religious services but which do not recall precedent either in form or decoration.

The new movement in church design, which claims a certain intellectual basis, may well be regarded with suspicion if the production lacks artistic inspiration. A building of the status of a cathedral or a church only deserves to be considered a work of art when it suggests spiritual environment. This truism is recognized by all divisions of society.

Here is to be encountered support of the principle that the finest aspects of design are the outcome of predetermined thought.

Like everything in architecture, the plans of Christian churches have evolved from early prototypes. The basilican plan branched into two divisions, one associated with Byzantium, the other with Rome. The Latin cross plan of Western Europe allowed innumerable variations such as double transepts, the chevet, additional aisles, side chapels and towers. The Byzantine plan, on the other hand, was a solution imposed by the adoption of a new form of cupola, necessitating huge counterforts corresponding to the four arms of the Greek Cross. All modern churches follow the precedent of these two types, with variations on the lines of the hall plan of some German churches or of King's College Chapel, Cambridge.

Modern church planning responds to the various denominations of the Christian faith. In the congregational plan, for instance, the pulpit is the focal point of the composition. In other churches the altar is the main object. Irrespective, however, of the above, there are features common to all plans which should be regarded as constant. In no other branch of art is planning as rigid as in that of places of worship. While in some instances the repetition of traditional elements such as nave, aisles, side chapels, vestries, screens, etc., occurs, in other instances the elimination of such features results in a return to a single geometrical plan form to accommodate the congregation and to provide full scope for seeing and hearing. Mind, however, is so imbued with the mysticism of religion that the elimination of customary features deprives the building of its emotional character. In modern church design, independently of the plan pattern, the ultimate effect will result from the selection and assembling of the material of which the church is to be built: brick, stone, timber or concrete, or a combination of these materials; the skill of the artist resulting from knowledge of similar structures admits of an infinite variety of designs. That rich simplicity of plastic form which is the aim of the designer arises from the elimination of features not essentially structural.

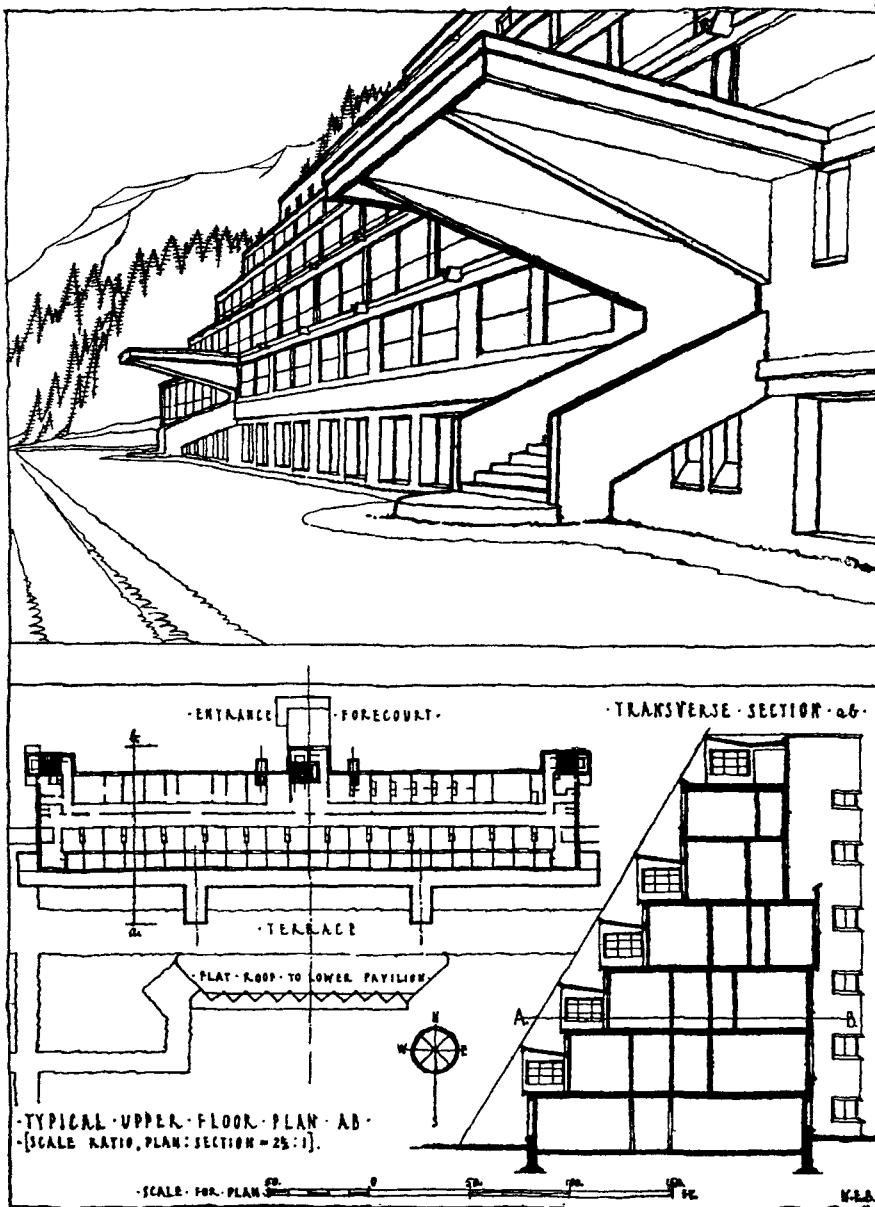
The intrinsic value of the completed building is due to the handling of the material. The time-honoured principle of contrast between void and solid, no less than interplay of light and shade, are determining factors. There remains, however, the consummate skill of the artist to model the components and to produce effects which are not only novel, but relevant.

In church designing two alternatives present themselves: either to intensify the mystic effect of interiors by reducing the amount of light, or to increase the window area abnormally. In both cases the interior effect is carried to the exterior. The treatments of large wall surfaces pierced with narrow openings will produce a dramatic effect of a different character from that obtained by exaggeration of window openings. Such features as towers, turrets, spires and flèches are often retained by reason of their symbolical meaning. But such purely accessory features have undoubted value, as elements of contrast in a composite design. Church planning varies but slightly for the actual requirements for administration and congregation. In the Church of England the plan should be schemed for processions and for the free passage of communicants from the body of the church to the communion rail.

Another consideration of vital importance is the position of the choir and the organ. Regarding the latter, a western position is often adopted, the choir being in close proximity. The placing of the choir and the organ will determine the position of the vestries. The addition of a baptistery, one or more side chapels and a room for parish meetings, depends on the size of the church. The cathedral, on the other hand, demands the inclusion of chapter house and various other features (such as archives, library, sacristy, choir practice rooms, etc.). Otherwise the general plan of a cathedral is but an enlargement of that of a parish church. In Roman Catholic churches the requirements mentioned above can be taken as the basis in planning, with the addition of saints' chapels, confessionals and occasionally a monumental baldachino and other attributes usually associated with the Roman Catholic rites. It must not be forgotten that the presbytery always forms part of the design. In the Greek Orthodox Church the threefold division of narthex, nave and hieron (sanctuary), veiled from the congregation by a screen (the iconostasion), carrying the icons. The Nonconformist churches are entirely planned for congregational purposes, taking the form of a square or rectangle with galleries, the access to the latter being from an entrance vestibule. The position of the pulpit is of greater importance than the altar; the pulpit is usually placed on a platform with two doors at the back leading to the vestries, one for the minister, one for the deacons. The addition of a choir vestry is often asked for. The communion table is usually in front of the pulpit. Sunday schools are arranged in juxtaposition to the church itself. Among the many

requirements of social development arises the need for church halls of an economical type. The new principle of planning evolved is that these halls are multifunctional; the church portion of the hall may contain the altar, choir, pulpit, organ and font, with vestry; this portion must be shut off by means of a removable or folding partition from the entertainment portion of the hall and should have a separate entrance. The portion of the building destined for social entertainment should have a small stage with two retiring rooms and suitable lavatory accommodation. Such halls usually accommodate from two hundred to two hundred and fifty people, and are intended to meet the needs of new suburban districts. A further necessity of modern times is the columbarium in churchyards and cemeteries for the deposition of urns.

Among modern church buildings St. Albans, Golder's Green, London, and St. Andrews, Luton, are examples of structural design inheriting all the qualities of traditional architecture. The retention of the tower as a prominent feature in the design in each case ensures a pictorial silhouette. The broad handling of the material allows scope for contrast with features such as openings and buttresses. Other modern churches in England show a remodelling of historical types such as the new church, Quebec Street, or the church for the deaf and dumb at Shepherd's Bush. The new church at Eltham, although departing from accepted traditional detail, conforms to accepted principles of massing and composition arising from the use of the medium adopted, namely, brick. The work of Bertram Goodhue in the United States of America is not only an example of the possibilities attending the remodelling of an historical style, but has demonstrated the flexibility of the historical theme in the hands of a scholar, as seen in the cathedral of Philadelphia. The churches of Le Raincy and St. Denis, by the Perret brothers, are equally meritorious in their frank exposition of economic structure in reinforced concrete. In both these examples the effect is not so much the outcome of the material employed as the predetermined theme of large fenestration on the unit principle. The infiltration of light through the windows results in an atmosphere reminiscent of King's College Chapel, Cambridge. The Grundtvig Church at Copenhagen, by Jensen Klint, aims at awe-inspiring scale, at the same time stressing the sentimental mood by the adoption of lines recalling an organ. In this example the theme of the brick churches of North Germany can be detected. This skilful adaptation also demonstrates the value of scholarly knowledge in design.



MODERN ARCHITECTURE: FRENCH

SANATORIUM GUÉBRIANT, FRANCE

(POL ABRAHAM and HENRY LE MÊME, *Architects*)

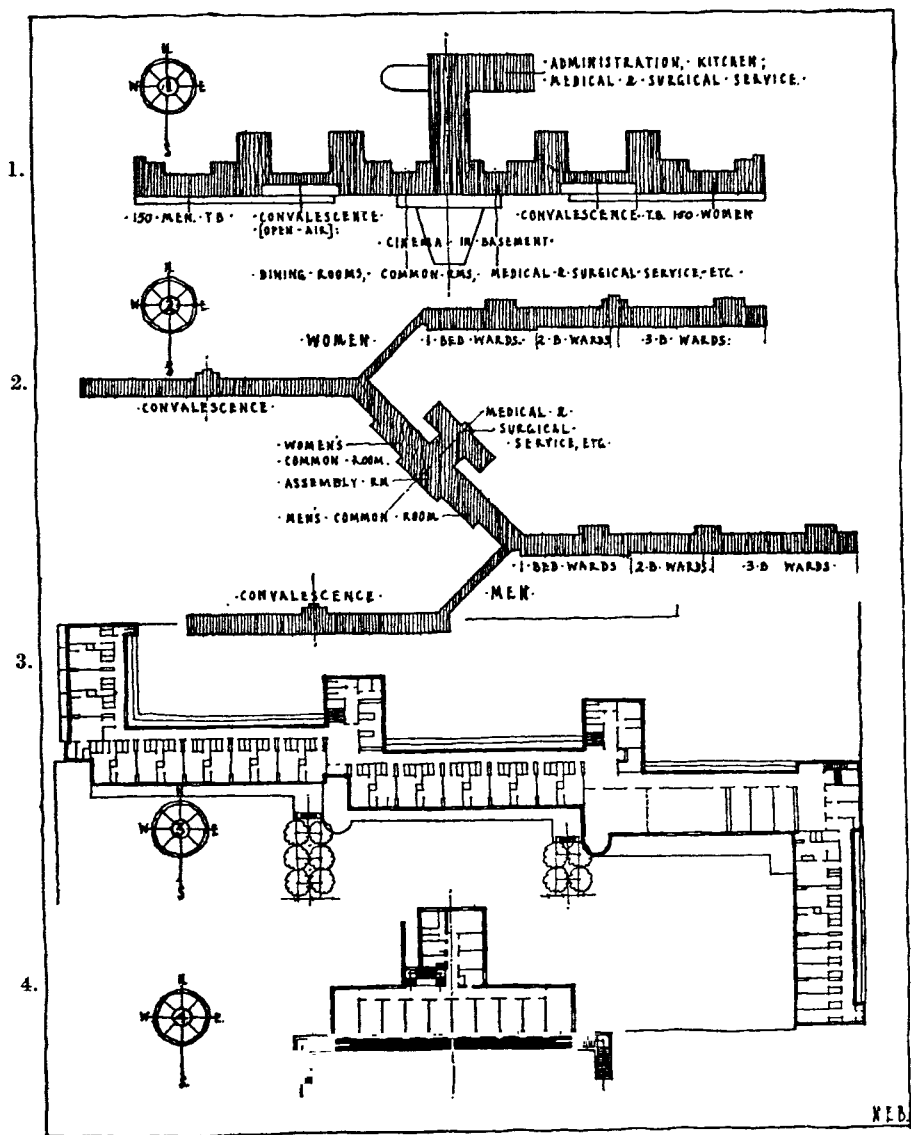
Plan cubicles with central circulation, each cubicle having separate balcony, section arranged to provide maximum of light.

By contrast, the Hogalids Church, Stockholm, by Ivar Tengbom, is traditional. The silhouette of the towers, each with different detail, imparts a novel character to the design. The interior exhibits imitation vaulting and proves how essential it is to observe structural truths.

HOSPITALS

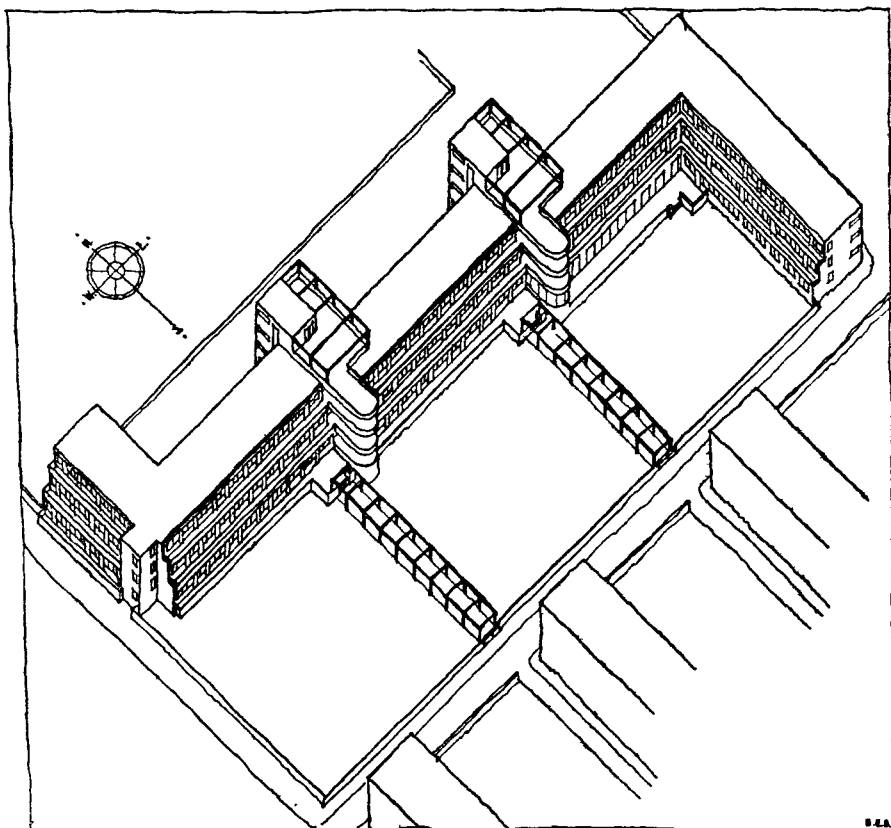
Among the technical problems to be solved by modern architects that of the hospital is one that presents the most complex issues. The solution of such schemes not only demands imagination in planning, but the co-ordination of specialized data. Hospital layouts may be on the horizontal or vertical system of planning. Vertical planning is generally adopted for sites in towns and cities, while horizontal or distributed planning is reserved for open and less expensive sites in the suburbs and the country. In cities, light and air are primary considerations, thus, providing the lower floors can be well and naturally lit, the upper floors have the advantage of purer atmosphere. For both types of planning correct orientation to secure the maximum amount of convenient natural light, especially early morning and afternoon light, avoiding the slanting rays of the westering sun, should be a guiding principle. Adequate ventilation by circulating currents of air and at the same time avoiding draughts is equally essential. All windows should have 100 per cent. opening capacity. Both horizontal and the vertical systems of planning recognize the advantage of the unit system, each floor or block being planned for its own particular and special purpose; where corridors are introduced direct natural lighting from a side wall is preferable. In a general hospital the following units are usual: (*a*) casualty department; (*b*) out-patients' block; (*c*) pathological block; (*d*) administrative block, with accommodation for secretary, matron, appeals, almoner, stewards, also engineering and carpentry shops, stoves, etc.; (*e*) quarters for the resident medical officer and staff accommodation for sisters, nurses and maids; (*f*) training school for probationers; (*g*) X-ray department; (*h*) teaching block for students; (*i*) generating plant, boiler-house, etc.; (*j*) laundry and disinfecting plant; (*k*) ambulance and car garage; (*l*) porter's lodge and male staff quarters.

The planning of a ward calls for exceptional skill. The maximum number of patients should not exceed from twenty-five to thirty. Modern practice tends to limit the number of beds, from between four to eight per unit. This has had the effect of eliminating the pavilion



MODERN HOSPITALS

1. SANATORIUM, CZECHOSLOVAKIA
2. SANATORIUM, WEST OF FRANCE
3. HOSPITAL AT FRANKFORT
4. CLINIC AT BERLIN



HOSPITAL BUILDINGS

HOSPITAL AT FRANKFORT

(FRITZ BERKE, *Architect*)

Repetition of identical floor plans. Orientation of plan to the south to ensure maximum of sunshine.

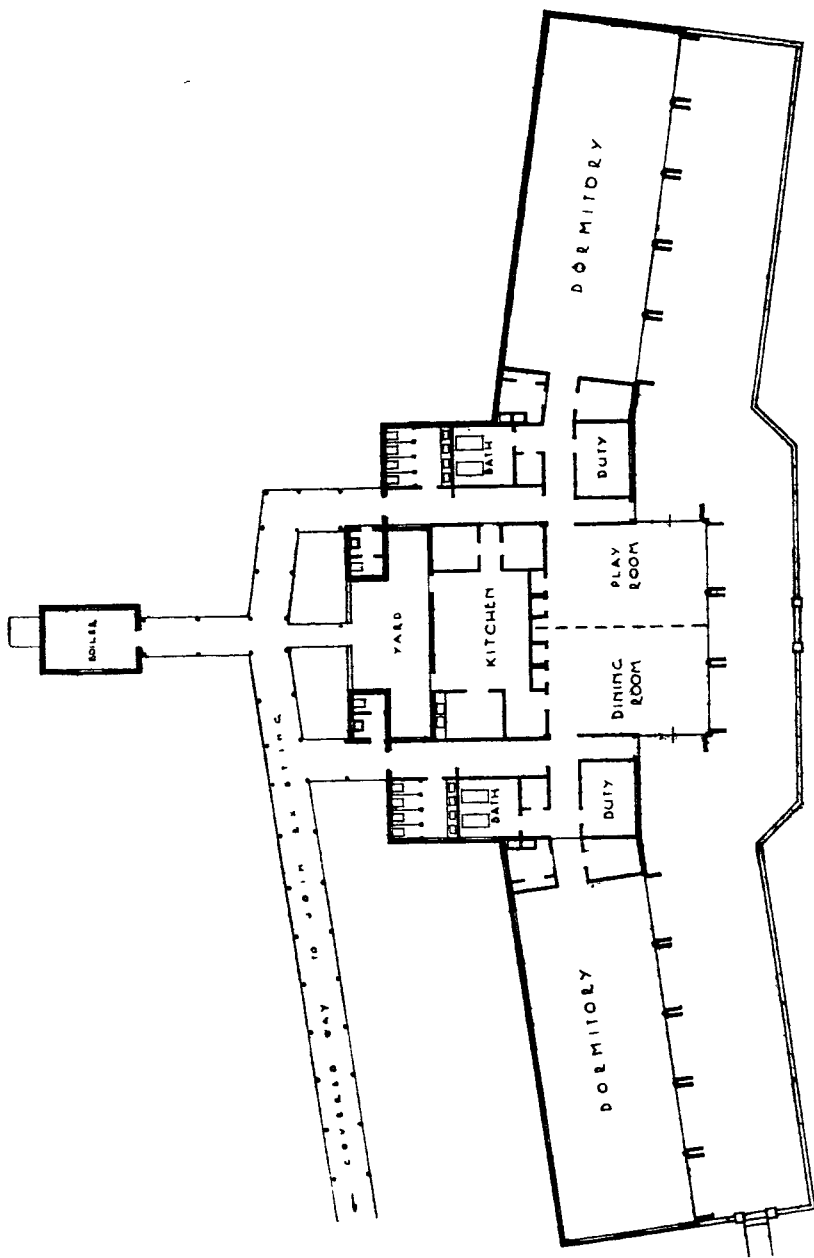
type of ward. With the larger number of thirty beds in a ward, it is preferable to place the beds parallel the one to the other in order to allow for easy segregation by means of screens. Special wards are allocated to paying patients, and sometimes a private block to be treated as a self-contained unit is asked for. The planning of a private ward can be arranged either as small separate rooms or with four beds to form a unit. Sanitary accommodation is best provided at either end of a ward or across the passage. One essential is that if there is no operating theatre in the



main building, then the wards must be placed in close proximity to the operating theatre. The X-ray department no longer occupies its former position, by reason of recent inventions which allow the X-ray apparatus to be worked off ordinary mains in the ward if required. This, in addition to the adoption of rapid developing of negatives, eliminates many former methods in this connection. The out-patients' department can be regarded as one of the chief units in hospital organization. In place of the central hall out-patients now enter a sorting-room from which they are directed to various consulting waiting-rooms. These have dressing-rooms and lavatory accommodation in proximity. Great attention should be paid to circulation to ensure that patients should not meet unnecessarily. The operating theatres are planned either vertically in tiers, in the case of city hospitals, or horizontally in the case of plans distributed over open sites, the main consideration being that light should be evenly distributed upon the operating table. The planning of the seating accommodation for students should enable every one to see and to hear with ease. The best arrangement is to provide a shallow gallery slightly raised above the floor-level. In connection with the operating theatre, the following must be provided: (1) sterilizing room; (2) anæsthetic room; (3) surgeon's room and washing space; (4) room for sisters; (5) post-graduate room; (6) mackintosh and linen rooms, etc. In tiered planning the provision of one or more lifts is essential.

The kitchen should be in a central position, as food has to be diverted to various wards in the shortest time and by direct routes. The position of a kitchen is best at the level of the ground, and if possible it should be of a single storey in height. The arrangement of stores, larders, kitchen office, preparation rooms, sculleries and pantries, should be determined by the reception of food from the outside, that is to say, delivery by lorries, and after preparation the position of corridors, lifts and staircases for delivery to the various wards. Diet kitchens and kitchenettes are usually attached to the wards. Private wards sometimes have independent kitchens. Quarters for resident medical officers, nurses, sisters and students should be disposed well away from the hospital itself.

Hospitals for the treatment of specific diseases, i.e. fever, cancer, chest and diseases of the nervous system, also maternity and infant-welfare centres, follow in the main the principles enumerated above. Special



1. GROUND FLOOR PLAN
SCALE OF FEET

TADWORTH CHILDREN'S HOSPITAL
(H. COURTENAY CONSTANTINE, *Architect*)

laboratories for the analysis of bacteria are sometimes attached to these institutions.

SANATORIA

The development of sanatoria on a great scale has brought into prominence the importance of open-air and sun treatment. The group of sanatoria built in the Savoie by Henri Le Même and Pol Abraham include individual verandas with ingenious arrangements for direct light into the sleeping-apartment, unaffected by the canopy of the balcony above. This system of clerestory lighting is capable of several variations. There is also the bay window unit with its own balcony *en suite*.

From the foregoing it will be gathered that each hospital problem contains its own particular solution, influenced by site cost and the specific nature of the cases for which it caters. In the case of sanatoria the elevations are determined by the horizontality of the sun decks and balconies. Further, in all hospitals the treatment of the glazed openings is of more importance than external wall surfaces, due to the necessity for obtaining as much light as possible.

Designs arranged in set-back formations, such as the famous sanatorium at Guébriant, are likely to be extended in the future. This form of design is essentially one for an open site, although the same principle has been adopted for the end treatment of wings, as, for example, the curved ends of the Freemasons' Hospital at Ravenscourt Park.

Chapter 10

CHARACTER IN DESIGN

CHARACTER IN ARCHITECTURE IS the expression of the purpose of a building portrayed in the design. There are, however, shades of differences which need explaining.

Architecture throughout the ages exhibits outstanding examples of logic combined with artistic intention, expressing outwardly and pictorially the function of the plan. But these triumphs in the sphere of plastic art only prove how rare and unequal is the power to impart character. In the past, not only was modality recognized to be one and indivisible with quality of expression, but within certain specified limits it was possible to identify the purpose of buildings from their elevations. This would still be applicable to the works of the present age, but for indiscriminate abuse in design.

To take one instance of features both novel and fashionable; the adoption of the horizontal window, in itself, is by no means a modern invention. This has led to a quasi-universal monotony in design now apparent in every country. The horizontal manner in the first instance was undoubtedly the outcome of logical requirements, but now through misunderstanding and abuse of the word "functional" this treatment of fenestration has degenerated into a mannerism.

Observance of modern buildings expressing material and purpose proves the value of adopting structural principles to new conditions and the weakness of imitative fashion. It is in the adaptability of the age-old principles of the art of architecture that the way of progress lies. The power of the art to respond to stimuli of new materials and conditions is beyond doubt, provided the impress of personality is retained.

What is termed character in architecture can be said to be the sum of the qualities of a building, this to be thought of in terms of mass,

proportion, structural integrity, beauty of detail and right handling of material; but, above all, the abstract and spiritual quality which imparts the meaning of the building, without a label. The power to endow a design with appropriate and decisive character is partly natural and partly the result of logic. Character in architecture, therefore, is not only the product of individual endeavour, but will result from the resistance offered by different problems, and is the logical expression of the designer's conception. Character, however, may be influenced by association of ideas, particularly in church design, or from other buildings which have become accepted precedents.

To illustrate the foregoing deductions, a few examples will be described. In all of these there is a paramount expression which is identifiable with the purpose of the particular building.

In library designs, the façade of the Bibliothèque, St. Geneviève, Paris, is composed with the large windows of the reading-rooms expressing the importance of the first floor. In addition, the screen panels in each window not only give emphasis to the purpose of the building, but are used as decorative submotifs suggesting bookcases within. This library façade has inspired the Boston Public Library, U.S.A., and in Paris the façade of the Ecole de Médecine, built by G. Ginain in 1884. Within the same category is the new library at Berne, which expresses the stack-rooms externally by a series of small vertical openings rhythmically spaced. At Versailles the new Record Office for newspapers expresses the position of the stack space in the same way. All the foregoing buildings demonstrate the fact that they have been designed for a specific and unmistakable purpose. In the elevation of the Archives of the Foreign Office in Paris, bordering the Rue de L'Université, there is another striking example of a blank wall suggesting storage of documents and books. Modern practice admits of large collections of books being kept in dark storage, which admits of their being stored below ground, provided there is adequate ventilation and that the access is convenient.

Civic character, associated with town halls and municipal buildings, has developed from a long and continuous tradition extending from the earliest times and finding its best expression in the City States of Italy, Flanders and Germany. There is poetry and character in such examples as the Town Hall at Bruges, the Cloth Hall at Ypres and the town halls at Antwerp and Amsterdam. The Municipio at Brescia and the build-

ings on the Capitoline Hill, Rome, by Michelangelo, also demonstrate the value of the master idea resulting in conspicuous expression. The picturesque quality which begins, on the other hand, with the Doge's Palace at Venice, and extends to the new Stadhuis at Stockholm, shows the value of accepted precedent as a basis for continuity and the evolution of modern designs.

False character in a building is the outcome of the view that façade architecture which is unrelated to the plan is legitimate. Reflection will prove that a vast number of buildings fail by this very fact. To illustrate this point, the façade of the hospital at Milan, although excellent as a pictorial frontispiece, fails in expressing the purpose of the building. An even more glaring instance is evidenced by the west front of St. Peter's at Rome, which misinterprets Michelangelo's original idea.

The importance of character in architectural design is demonstrated by certain buildings which by general acceptance are regarded as masterpieces of expression.

While the Gare du Nord is representative of railway station architecture of the last century, the new station at Helsingfors is typical of to-day. Although built at widely different periods, both structures have the unmistakable stamp of the purpose they represent. The new station at Le Havre is one of the recent additions to this section of design. Here the concourse is the dominant external feature.

In regard to the aspect of these buildings, character is mainly the outcome of the treatment of the voids. The suggestion that these great buildings exist for crowds and not for isolated individuals is conveyed by the breadth of the handling. But these are commonplace matters compared with the recognition of practical factors and the marshalling of the latter in orderly sequence. The character of a railway station is determined as much by the elevation of the concourse, the external canopy sheltering crowds, the mighty clock, the accommodation for vehicular traffic and, above all, by the pervading theme of travel.

Other works of an impersonal nature, such as markets and exhibition halls, have a character which cannot be mistaken for any other purpose. The Halles of Paris, with their steel supports and roofs and great expanses of glass, should be compared with the market hall at Rheims, by Maigrot, or the market-hall at Lyons, by Tony Garnier. In the latter case the span is formed of steel trusses carried down to the floor on either side. The lateral lighting by a series of clerestory windows is expressed on the

end elevation by stepped gables. Thus, the interior and the exterior are brought into perfect harmony of statement. There is no mistaking the building for anything but a great public hall for the sale of commodities. In such buildings the selection of a suitable system of roof construction arising out of the conditions is the chief determinant.

It is very observable that the buildings which have made such notable additions to architectural character to-day are those conceived to meet contemporary exigencies. The stadium, for example, is no longer modelled on the lines of the Roman amphitheatre, although its purpose is practically the same. The new stadium at Amsterdam can be cited as a remarkable building of appropriate treatment. The position of the seating is expressed externally in a bold drumlike surface; the entrances no less than the intermediate circulations at a higher level are brought into sequence by careful adjustment. Over all there is regard for contrasts and play of light and shade. The placing of the masts to relieve the skyline and the horizontal proportions given to the entrances are equally expressive of the function of the building. The great stadium at Turin provides another instance of character in design.

The design of office buildings and blocks of flats is largely a matter of disposing window openings in series and obtaining suitable contrasts and minor interests. Very often the treatment of the silhouette is brought into play as a foil to the monotonous repetition of voids. The character in each case results from the subordination of the various floor-levels and the windows to a general uniformity.

Character in architecture is essentially a deductive quality, that is to say, it depends upon the power of the designer to express outwardly the arrangement he has planned within. But the ultimate effect depends as much on the method of construction and the selection of the material employed for each specific purpose as upon the skill of the architect.

PART II

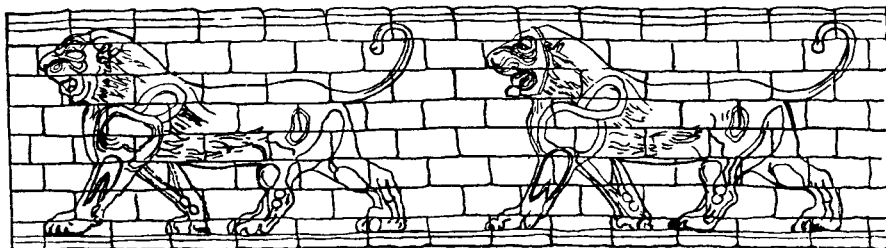
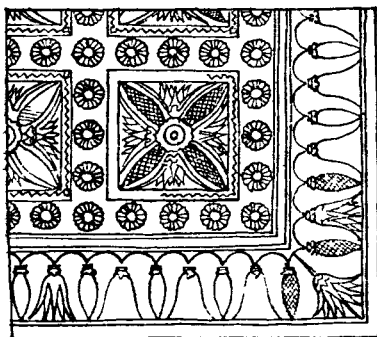
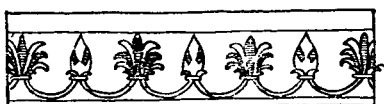
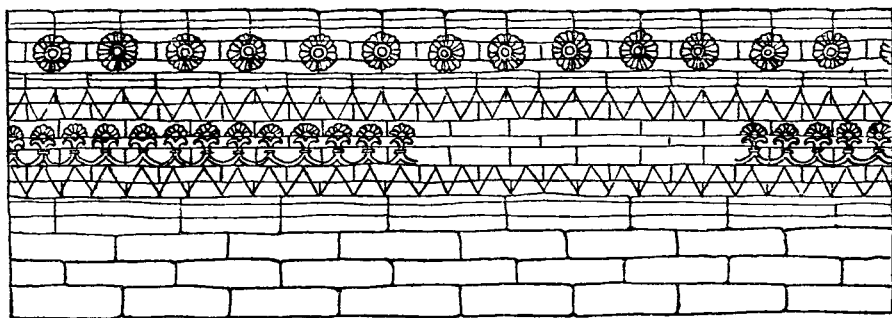
Chapter II

DECORATIVE COMPOSITION

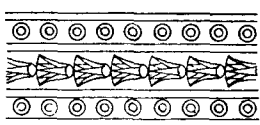
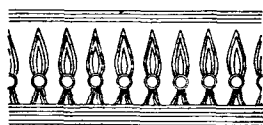
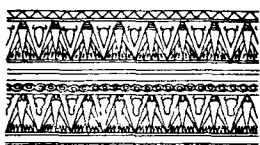
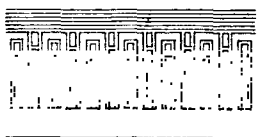
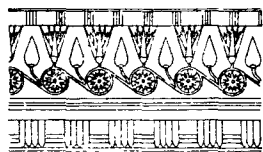
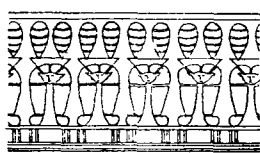
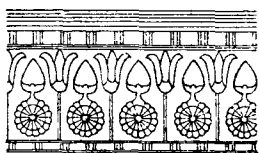
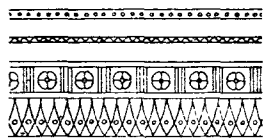
CLASSICAL, MEDIÆVAL AND EARLY RENAISSANCE

THE TREATMENT OF INTERIORS is one of the most important branches of design. This section of the art, comprising ornament, follows the laws of architectural composition already discussed, the general axiom being that ornament must always be sympathetic to the surface which it adorns.

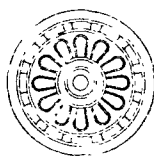
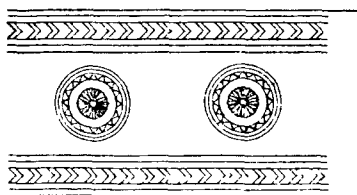
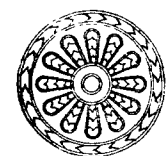
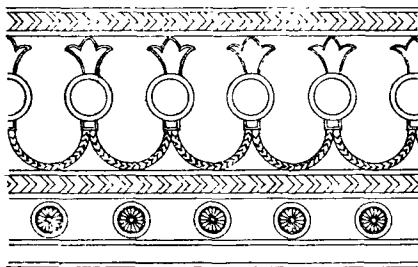
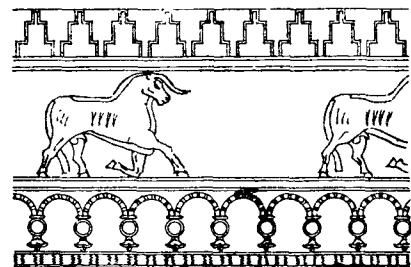
If we confine our study to the historical exemplars, it is clear that from the earliest periods colour has been a primary consideration. From colour the process continues to line decoration, sculpture in low relief, ceramics, tapestries and panelling. The introduction of glass enamels, precious metals and rare woods, dates from the earliest times. In the art of Mesopotamia and Phœnicia the treatment of the interior surfaces of the palaces consisted of painted surfaces, linings of woods and the application of glazed and patterned tiles. This treatment admitted of drawings of animals, birds, and the human figure. In Egypt the coloured walls of the temples and tombs often consisted of three parts, namely, the dado representing the earth; the wall, the horizon; the ceiling, the sky. The various conventional patternings employed for decoration were derived from local flora, the lotus, papyrus, palm, etc. In Minoan art the famous frescoes of Knossos and Phæstos evidence the association of colour with architecture. From Homer we gather the statement that the Mycenæan palaces and houses were richly decorated with gold, silver, precious woodwork and coloured decoration. The use of colour distinguished alike the interiors of temples, public buildings and mansions. Polychromatic decoration formed part of the art of Archaic Greece and was continued during the Hellenic and Alexandrian



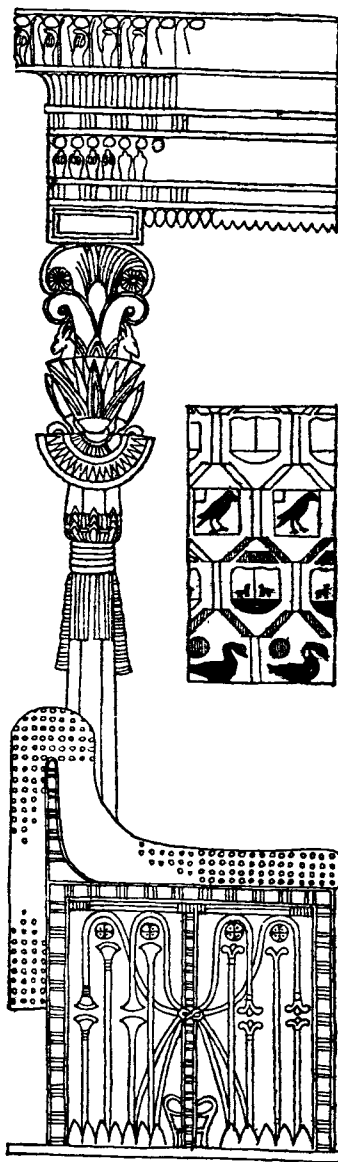
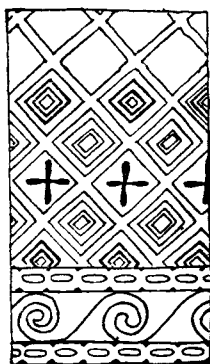
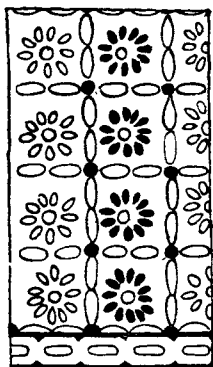
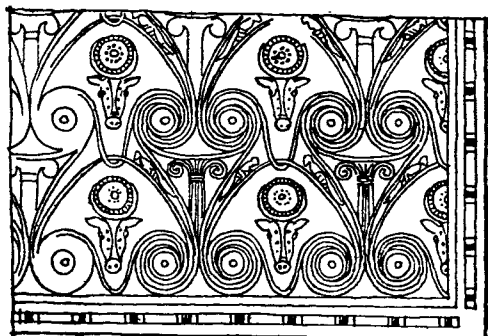
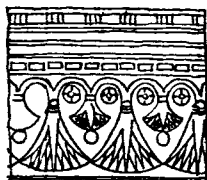
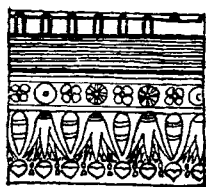
MESOPOTAMIAN ORNAMENT



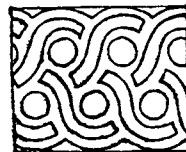
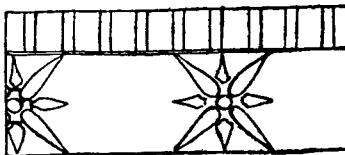
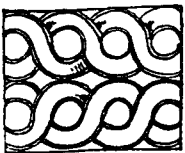
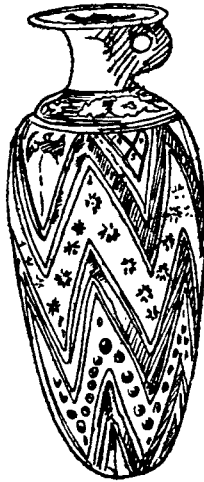
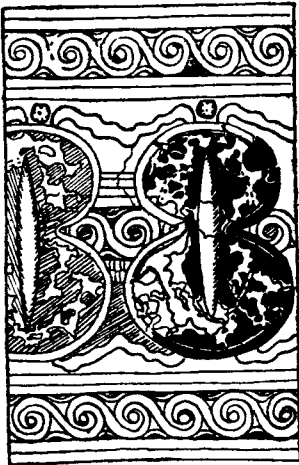
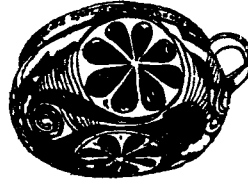
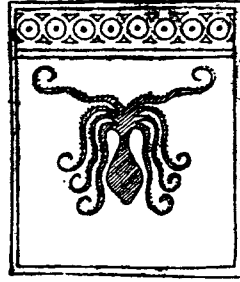
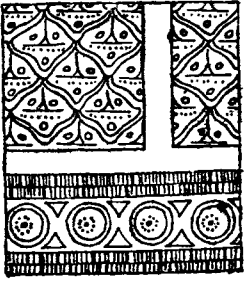
EGYPTIAN ORNAMENT



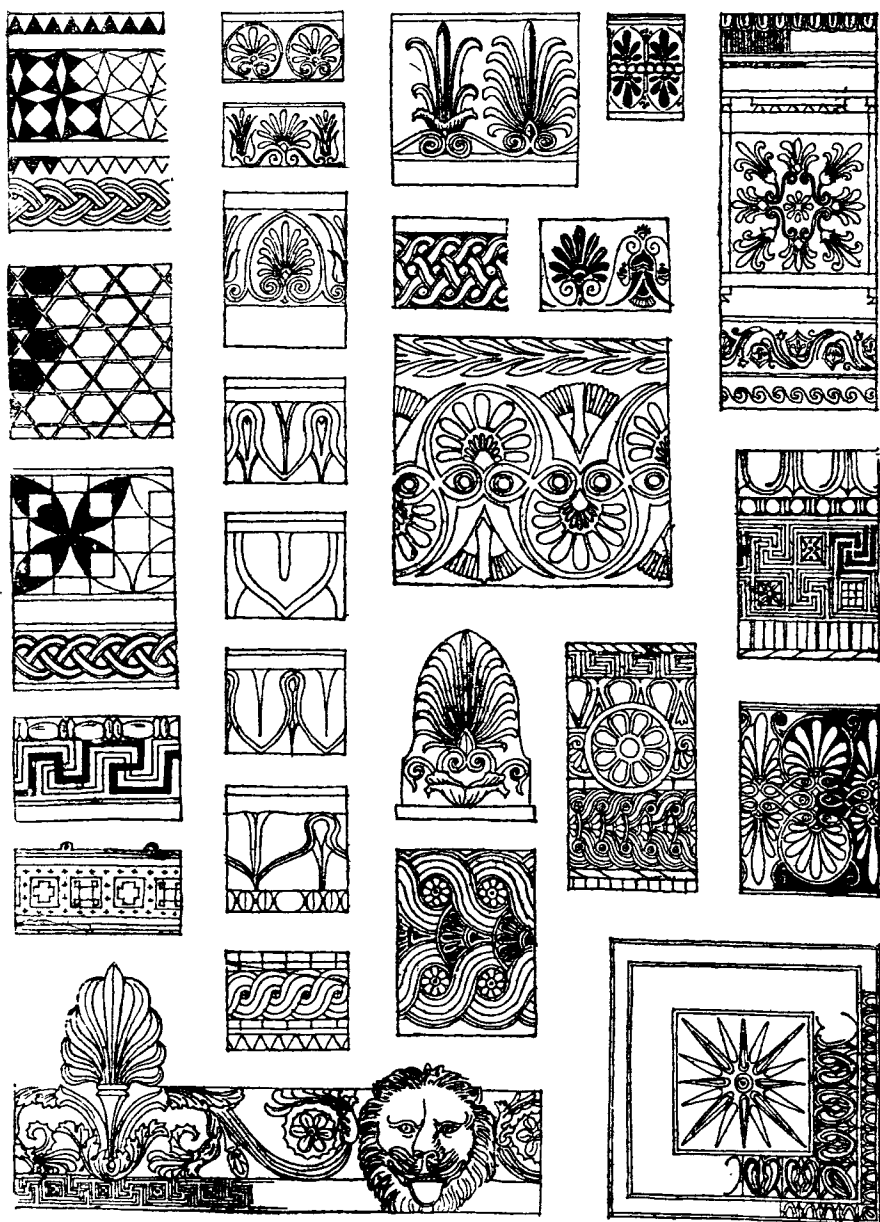
ASSYRIAN ORNAMENT



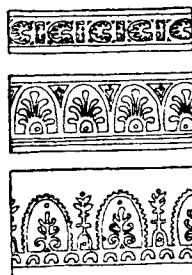
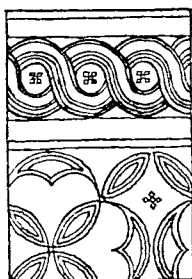
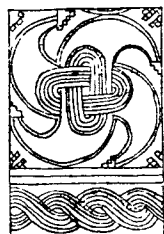
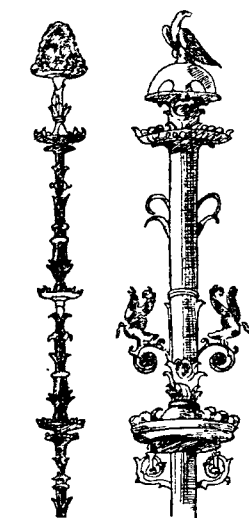
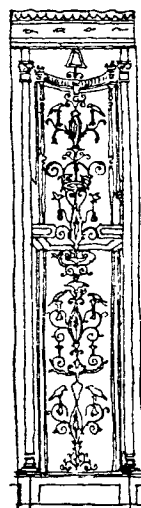
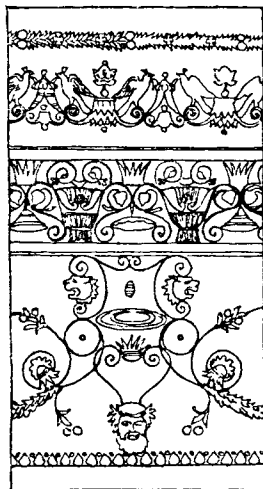
EGYPTIAN ORNAMENT



MINOAN AND MYCENÆAN ORNAMENT AND DECORATION



GREEK ORNAMENT



POMPEIIAN ORNAMENT

periods; conventions both of nature and of decorative symbols are known to have existed. Part of Pompeiian decoration can be assigned to Greek influence in this regard. Roman decoration included polychromatic designs executed as marble veneers, mosaics or painted wall treatments. Carved ornament in Greek and Roman times was used to emphasize the contours of mouldings, while the use of continuous scrolls led to the invention of the arabesque for the panels of pilasters. Three or four distinct styles accompanied the development of Pompeiian interior decoration. The first is incrustation or systematic marble inlay, derived from Asia Minor and Greece via Sicily. Towards the end of the second century B.C., it became customary to divide wall surfaces into panels imitating marble veneering, and at the close of the Roman republican period the imitation of marble by painting on flat surfaces was usual. Architectural features were also introduced as part of the scheme of painted decoration, this practice being an imitation of Greek paintings from Syria. The third style began *circa* A.D. 50, when a strong Egyptian influence was exercising the minds of the artists. Decoration now entered upon the sphere of imaginative fantasy. Natural forms are made to serve in the place of architectural columns, for instance, reeds, scrolls, volutes, or candelabra supporting representations of shrines, human figures riding upon storks and chimeræ. In the fourth style the architectural accessories became even more wildly fantastic. There are effects of false perspective and of attenuated representation. Mural paintings of the same period in Rome belong to a nobler category, as may be judged from the examples in the Museo delle Terme. On the other hand, the finest floor mosaics, like those discovered at Timgad in North Africa, were extensively in use.

From the foregoing can be concluded that classical art had evolved not only schools of decoration, but had evoked rules and principles for the guidance of individuals and patrons.

Byzantium drew inspiration from both East and West. From Ancient Rome the artists carried the technique of mosaics, while the Alexandrian school of miniature painting inspired the gamut of colour for blue, silver and gold backgrounds. From the Roman influence shown by the mosaics of Santa Sophia the art merged into the austere treatments of the Macedonian revival. The Sicilian school which followed drew its inspiration from Saracenic patternings. Finally, in its decline the art of the mosaicist became imitative of the sister art of decorative painting. The transition



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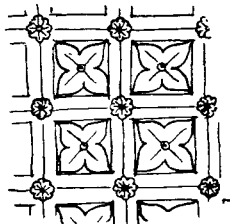
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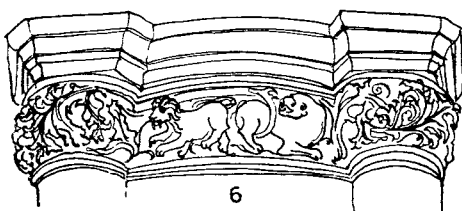
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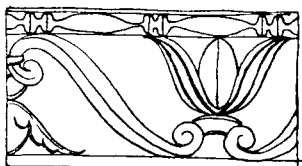
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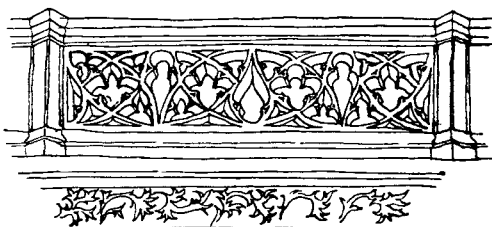
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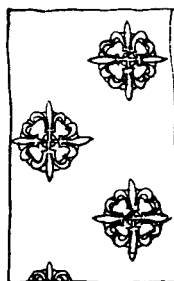
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11



12

ROMANESQUE AND GOTHIC ORNAMENT (FOURTEENTH CENTURY)

1. EARLY FRENCH MURAL DESIGN, BAYEUX.
2. ITALIAN ROMANESQUE MOSAIC, VENICE.
3. CARVING ON PIER, NOTRE DAME, PARIS.
4. SPANISH CARVING, TOLEDO.
5. DIAPER PATTERN, AMIENS CATHEDRAL.
6. FOURTEENTH-CENTURY CAPITAL, NEVERS CATHEDRAL.
7. CAPITAL, DOGE'S PALACE, VENICE.
8. STONE DECORATION, NOTRE DAME, PARIS.
9. ITALIAN CARVING.
10. MURAL PAINTING, FRENCH, SIXTEENTH CENTURY.
11. BALUSTRADE AND CORNICE, ARRAS, FRANCE, FOURTEENTH CENTURY.
12. MURAL PAINTING, NOTRE DAME, PARIS.

from the bold and coarse Roman ornament to the stylistic treatment of the Byzantine school illustrates how mannerism in technique eventually leads to the formation of a distinctive style. The Greek craftsmen working in marble used their own skill and judgment in formulating a new rendering of an old theme, the variation in the character of the ornament resulting from the new and harder materials worked upon.

In Romanesque and early mediæval times Art and Religion became closely associated, especially for the interiors of churches and monastic buildings. This period of transition was distinguished by the ever-growing tendency to freedom from both the Classical and the Byzantine tradition. When, towards the close of the tenth century A.D., these influences weakened, Western art began once more to move towards a definite expression of its own.

Early Christian ornament consists of geometrical patterns and interlacings. It was not until the reign of Charlemagne that the Romanesque style, based on classic architecture and influenced from Byzantium, reached the turning point. The designers of the early churches were almost invariably priests or monks whose training in the monasteries conserved learning and scholarship through the darkest period of early mediæval history. The ornamentation of capitals, of the jambs of doorways, of archivolt and architraves, formed the primary basis of embellishment. Glass painting, dating from the twelfth century, as at Neuweiler, Alsace, and wall-paintings in lunettes, and on the surfaces of walls above altars, belongs to this epoch. At St. Albans Abbey, A.D. 1077, the original wall-paintings can be seen on the compounds of the early Norman arcade, while in the crypt at Canterbury there exists a picture of Santa Sophia at Constantinople. In Italy decorative wall-paintings, as in the cathedral of Monreale or the Church of Martorana at Palermo, follow the Byzantine tradition. In France the scroll treatment of wrought iron grilles, glass paintings as at Chartres, and grisailles as at Bonlieu Creuse, reveal similar influences. Regular patterning embodying floral ornament is repeated in the scrolled wrought iron work of door hinges. The growing autonomy of the Church at this period resulted in the spread of similar art patterns in all Western countries, ranging from Germany, France, Spain and England.

In England the elaborate carved doorway at Ely Cathedral is, perhaps, the finest example of Romanesque sculptured ornament in the country, and the later wrought-iron hinges are equally renowned. The relation-

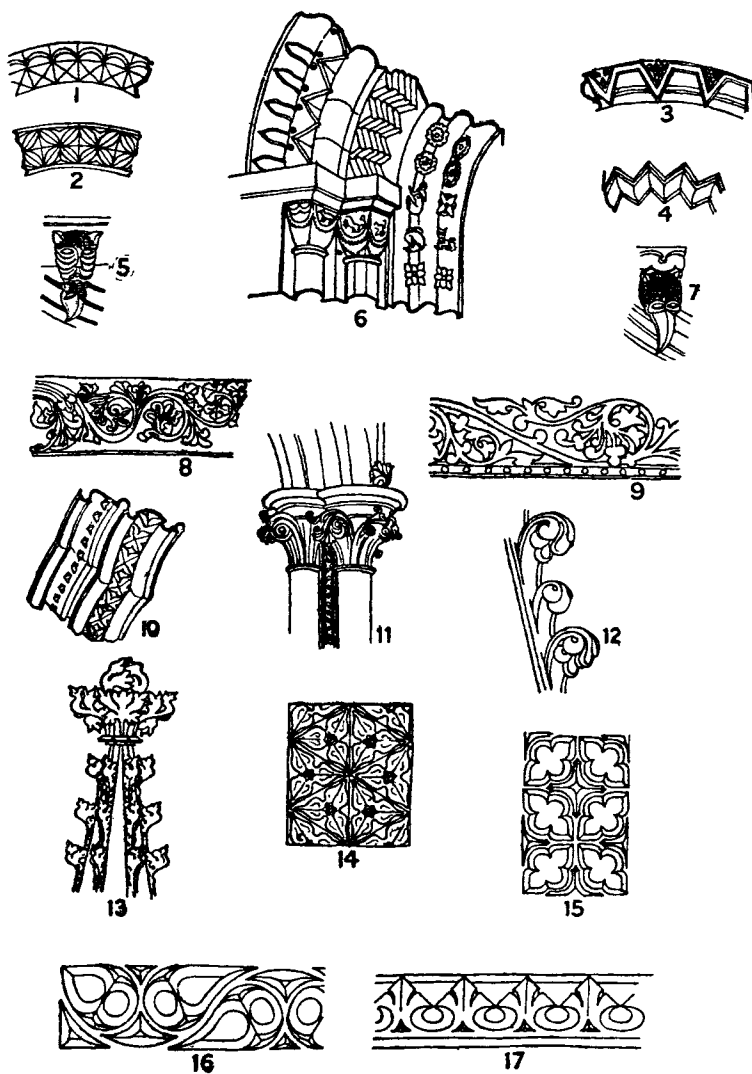
ship between Scandinavian and Celtic art has long been the subject of investigation, the introduction of the Celtic forms being attributed to the influence of Irish missionaries whose art was influenced by Coptic or Greek precedent; the slight Romanesque ornamentation apparent in the woodwork of the timber and mast churches of Northern Europe is thus explained.

Gothic ornament derives its spirit from the Romanesque and expresses the extraordinary vitality of mediæval social conditions from the twelfth to the sixteenth century. Much of the ornament was due to the intensive emotionalism and religious austerity characteristic of the thirteenth century. In Gothic art ornament is always kept in strict subordination not only to the form of the building, but to the nature of the structural components; structure is never concealed by mere subterfuge. Developing from the principles of Romanesque ornament, the carved capitals of the thirteenth century show a foliage which is conventionalized with a rigidity which gives sharp contrasts of light and shade. As will be explained more fully, it is to the interior treatment of the chambers of the great fortified châteaux that we must turn for information regarding the decoration of walls and wooden ceilings. The thirteenth century in France witnessed a change from the earlier manners and customs, especially in the higher ranks of society. Rivalry between feudal lords in tournaments and in the display of wealth was accompanied by greater deference to the comforts and luxuries of home life. The masonry style of the interiors of courts of justice, of chapter houses and of vast banqueting halls, depended for effect on the display of construction. Where ornament was introduced it was reserved for capitals and for bosses. Timber ceilings were moulded and sometimes painted. The Salle Capitulaire at Noyon is a representative of this treatment.

In the château the chief feature of the principal apartments was the hooded fireplace, usually decorated with sculpture and supported on brackets. The great living-room of the château served as bed-chamber, study and reception-room. The massive beams of the ceiling supported the secondary beams, which in turn carried the floor joists, all the arrises being moulded and stopped. Sometimes the structural timbers were painted and gilded, the interspaces being coloured as well. The stone walls were treated with a lime wash and their plain surfaces were concealed by rich tapestries suspended from the wall plate

and reaching to the floor. The floor, frequently tiled or paved, was covered with rushes. In the fourteenth century the same general principles were observed, with slight variations in the treatment of the ornament and painted stone jointing with fleur-de-lys patterning. During the fifteenth century more elaborate decoration was introduced. For instance, wall panelling and tapestries were deemed essential for comfort. The fireplace, for centuries, continued to be treated as the most important feature. In the palace of the archbishop at Rheims can be seen an example of a fireplace of the period, with its rectangular elongated opening and cast iron fire back. The carved frieze immediately above the opening expresses the essential construction. Above this the wall surface is panelled into three canopies in low relief each containing a shield, the whole field being studded with gilt fleur-de-lys on a white ground. This treatment not only made the fireplace the conspicuous focal point adjacent to the tapestries on either side, but also recalls to mind the fact that the fireplace, although an internal feature, is treated in the manner of external masonry. At Bourges, in the ancient Hôtel de Ville, there is a similar fireplace. The origin of the hooded fireplace has been attributed to the earliest forms of wicker or basket hoods covered with lime stucco and tied with a rope at the springing. The retention of the rope as a decorative feature is instructive.

In England from the thirteenth to the sixteenth century, prominence is given to the treatment of the magnificent carpentry roofs, Westminster Hall being a typical example at one end of the scale, while the Great Hall at Hampton Court typifies the style of the Tudors. The refectory at Bushmead Priory in Bedfordshire shows a wall treatment which was common in the fourteenth century. The plaster in this case is painted in imitation of stone jointing with a small rosace at the centre of each panel. A similar treatment was observed at Westminster Abbey at an earlier date. At Bushmead, scrolled ornamentation with figures of birds enriches the gabled ends of the interior. Usually tapestry covered the bare stone or plastered walls. Towards the end of the fifteenth century panelling was more generally introduced, and at Hampton Court a painted plaster frieze surmounts the wall panelling. Wooden ceilings in England were generally left the natural colour. The best surviving examples of English painted decoration may be seen in the ancient churches. Pictures of saints with embroidered cloths were used as hangings as early as the seventh century.



MEDIAEVAL DECORATION

NORMAN

1. ST. ETHELRED'S, NORWICH.
2. ROMSEY.
3. NEW SHOREHAM, SUSSEX.
4. MALMESBURY ABBEY.
- 5, 6 & 7. IFFLEY CHURCH.

EARLY ENGLISH

8. CARVING, WESTMINSTER ABBEY.
9. PAINTING, YARMOUTH.
10. YORK.
11. LINCOLN.
12. DECORATION ON A TOMB.

DECORATED

13. ST. MARY, BEVERLEY.
14. GEDDINGTON CROSS.
15. BOTTISHAM.
- 16 & 17. FROM CHURCHES IN NORFOLK.

It was customary to paint the picture of the patron saint of a church either on the walls or on the altar.¹ A little later the ceilings of Canterbury Cathedral and of Peterborough were painted. From the fourteenth to the fifteenth century additions were made to the wall-paintings already in existence in almost every important church, in some cases the new subject being painted over the old. The doom picture was usually reserved for the space over the chancel arch. Figures of St. Christopher occupied the wall of the north aisle, sometimes near or above the north door. Painted reredoses and paintings of saints on the lower panels of chancel screens were now usual. Diaper patterns such as those carved in stone at Westminster, Higham Ferrers and elsewhere, were sometimes imitated in paint to represent curtains and falls. Roofs and ceilings are included in the earliest evidences of pictorial decoration, usually painted in azure and studded with golden stars, the symbolic reference to heaven. The ceilings of the Bodleian at Oxford, and St. Michael's, Coventry (now destroyed), can be studied for direct evidence of the survival of these methods of ceiling decoration. Colour and gilding were used profusely in all decorative schemes. Even roofs and furniture were treated with equal regard to effect. One colour is always predominant; next to the gold this is usually blue or red relieved with black. Green was frequently used as a dominant tone for backgrounds. The rood screen of Branfield Church is one of the finest examples of coloured decoration.

The nave roof of Aldenham Church, Hertfordshire, the subject of much study and careful drawings, is a notable example of the blend of blue, silver, red, black and white, the dominant colour in this case being blue. The rafters are painted red with a black pattern of diaper form, the interspaces between the rafters being left uncoloured. In Spain the polychromatic effects employed to embellish the magnificent wooden roofs and ceilings have been derived from the earlier Moorish buildings. Spanish ceilings of the fifteenth and sixteenth centuries have a rich profusion of decoration which extends from the coloured beams and rafters to the interspaces between. Eventually this system gave place to the elaborately panelled wooden ceilings of the Renaissance and to the patterns of the Plateresque style. The interior of the old University of Granada, with its richly painted ceilings and elaborate moulded doorwork, is typical of the transition from the Mediæval to the Renaissance. The

¹ Decision of the Second Council of Calcuth in Northumberland, A.D. 816.

choir stalls of Jaen and Cordova are also typical of the work of the early sixteenth century.

There is no great divergence in the treatment of the interiors of mediæval buildings throughout Europe. It is observable that the scheme of decoration invariably emphasizes the construction. Local customs and climatic conditions have in all cases played a part in determining particular details. It is true that a great part of the wealth of the Middle Ages was expended in uniting splendour not only with religion but with the adornment of civic and private buildings. It remains to deal with the characteristics selected from several countries. It has already been stated that the mediæval apartment, with its stone walls, wrought timber ceiling, traceried windows, and tiled floor, demanded colour on the walls and beams to give warmth of effect. Carved and richly moulded detail followed the dictates of each particular scheme, the focal point being the huge open fireplace with the enriched hood, often decorated with canopies and sculptured figures. The main effect of almost any interior which was not vaulted in stone or roofed by curvilinear members in timber was gained by the treatment of the beams and joists which spanned the smallest dimension. There is no finer example of the foregoing than the treatment of the apartments of the Musée de Cluny in Paris. In England after the Wars of the Roses, when the country again became tranquil, the aristocracy in their desire for comforts encouraged a fresh wave of craftsmanship and design. Hence it is that every Tudor mansion of note exhibits rich treatments of panelled walls, screens, roofs and ceilings of unique design. The Hall at Penshurst can be cited as an early example of manorial dignity. The Great Hall at Hampton Court and the halls of some colleges at Oxford and Cambridge continue the accepted scheme of panelled interiors; the affinity between the decoration of collegiate and domestic apartments of great scale is well known. The oriel window, the vast open fireplace, the minstrel gallery and the noble screen, the latter separating the buttery from the dining space, being common. But it was the design of the roof, often a masterpiece of carpentry, no less than the beauty of the stained-glass windows, that produced the internal effect.

The transition from Gothic to Renaissance forms in England occupied a far greater period of time than was the case in other countries. From 1500 to 1620, English domestic architecture perpetuated certain

idioms which are purely mediæval. No better example can be given than the treatment of the interior of the chapel at Knole, Kent, where the blend of tapestry, panelling, screens and ribbed ceiling unites the opposing elements of Gothic and tentative Renaissance details.

In France the connection between mediæval art and that inspired by the Italian Renaissance is to be seen in the treatment of the minor apartments in the château of Blois. These lesser works of the period of Francis I afford direct evidence of the merging of two principles of design, namely, the retention of structural elements for ceilings and the introduction of stencilled and painted arabesques for vertical wall surfaces. The analogy between French and Spanish works of similar stamp, of this period, is often overlooked. In Spain the treatment of the ceilings and the walls of buildings not only shows acceptance of the Plateresque style, but records the Moorish treatments of an earlier time. The link between Spain and France in this regard is weaker than that between France and Italy, but nevertheless it exists, and it can be attributed to Francis I having intimate knowledge of Spain.

Such considerations prepare the mind for acceptance of the Italian school at Fontainebleau and the subsequent development of the French version of the Renaissance.

In Germany the spirit of transitional art of the early sixteenth century was partly inspired from Italy and partly the outcome of the skill of the native artists and craftsmen. The rise of the new manner has been ascribed to intercourse between the merchants of Augsburg and Venice. Panelled walls and ceilings with lightly worked mouldings, paintings on wood, slight gilding and carving in low relief represented the decline of the vigorous art of the earlier period, and at the same time heralded the new. The innovation of circular or square stoves formed of enamelled tiles now became general in Northern Europe. The Festal Hall of St. Georges at Stein is a typical example of the foregoing. The treatment of interiors was influenced from Venice, at that period the great mercantile port for all middle European countries.

Chapter 12

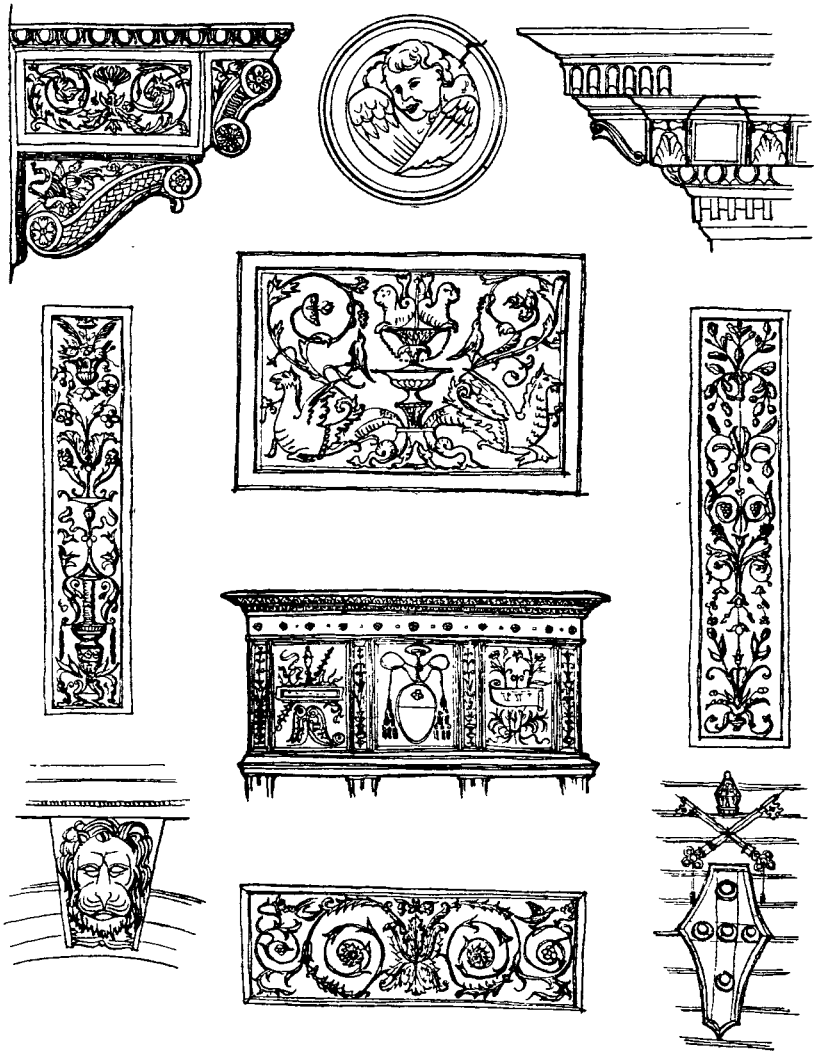
DECORATIVE COMPOSITION IN ITALY, FRANCE AND SPAIN

SIXTEENTH TO NINETEENTH CENTURIES

BY FAR THE MOST important occurrence was the revival of classical taste in Italy and its influence on interior design and decoration. The basis can be found in the treatment of the apartments of the early Palaces of Florence and Venice, the association between the styles of Lombardy and Venice being reflected in the austere treatment of timber ceilings, arched openings, and plain plastered wall surfaces. The work of the Italian primitive painters, where perspective scenery is introduced, reveals similar *naïveté* of architectural treatment. The change from simple structural features to an assembling of arches, balustrades and panelled doors shows the real and practical influence of the artists who directed the untutored minds of ordinary folk. Finally, we arrive at the period of the princely patron and the establishment of the bottega.

During the late fifteenth century the art of the Renaissance in Italy, as typified in the design and decoration of interiors, developed a remarkable versatility. The various media for artistic technique to be exercised included painting, carving and elaborate carpentry and joinery. From austere statements of structure, such as the interiors of the School of St. Mark, Venice, 1485, where slender columns standing on elongated pedestals support the master beams of the ceilings, to the frescoed interiors of the Borgia apartment in the Vatican is no mean range. Ceilings of elaborately panelled and carved woodwork can be studied together with others in which painting on stucco with modelled ornament is more usual.

THE ART OF ARCHITECTURE



ITALIAN RENAISSANCE: ORNAMENTAL DETAILS

Among outstanding examples which may be named, the Ducal Palace at Mantua with its frescoed walls, or the Casa Colleoni at Bergamo, rely on the dominance of painted surfaces, walls and ceilings being enriched with arabesques. The geometrical patterns of ceilings, such as in the Church of Santa Maria delle Grazie at Rimini or in the Villa Medici Poggio at Cajano, are repeated at Siena and at Venice in the chapel of St. Sebastian. All the foregoing, together with the ceilings of the Ducal Palaces at Urbino and Mantua, date from the years 1485 to 1510. The elaborate framings on the great scale in turn inspired the lesser panellings of wainscot dadoes and the fashion of inlays. It was left to the great architects of the early Renaissance, Filippo Brunelleschi, Giuliano San Gallo, Bramante, Michelozzi, Alberti and Pietro Lombardo, to co-ordinate the rising taste for classicality. The magnificent interior treatments of the Pazzi Chapel and of the Capella Portinari in the Church of San Eustorgio, Milan, or of the interior of the Church of Santa Maria Dei Miracoli at Venice, form the prototypes for the succeeding schools. The principle of subordinating decoration within an architectural frame was formulated. The finely carved marble and stone chimney-pieces are no less a worthy contribution to the story of the art of the time. Italy, with its famous groups of painters, favoured the adoption of colour for interior decoration not only in this predilection common to Siena, Perugia, Bergamo and Mantua, where scenic effects are depicted on the surfaces of walls, but it led eventually to the studied patterned conventions which distinguish the designs of Raphael in the Villa Madama, Rome. The codification of classical scholarship in architecture with the subsequent application of the orders to interiors resulted in designs where every element from the ceiling panels to the floor patterning is governed by a modulus. The principal apartment of the Massimi Palace, Rome, designed by Baldassare Peruzzi, is a fine instance of harmony between architecture and decoration. The same principle of designing dimensioned compartments, arising from the adoption of an order as the chief unit, has been followed by the architects of Genoa, particularly Giacomo della Porta, Guarini and Juvara.

Similarly, to the change from academic classicality to the dynamic expression of the Baroque for exteriors, interior design followed suit. The chief exponents of the new manner were Guarini, Juvara, Rainaldi, Borromini, Bianchi, Tibaldi and the famous Bernini. At this period,

1600–1750, the aim of the designer was to combine painting, free carving and stucco modelling into unified perspective for apartments on the grand scale. To aid in the effect mirrors of large size, rich hangings and elaborately designed candelabra became part of the scheme. Intricacy of mouldings, sharp profiles, sinuous cartouches, panels framed with scrolls and cupids, and heavily metallised and enriched contours blend in not unpleasing sympathy, to produce a voluptuous ensemble. This riot of ornament and mixture of forms led to extravagant designs verging on vulgarity. The carnival spirit of Venetian design and furniture during the eighteenth century is reflected in the drawings of Bibiena.

It can be imagined that these great developments in the decorative art of Italy, which have been enumerated, could not fail to bring similar changes in the architecture of the nearest country to the Italian Peninsula. The bold spirit which animated Italian architects in the early sixteenth century was about to be transferred to the royal patronage of France. In this the chief innovation came with the introduction of Italian designers and craftsmen to Fontainebleau. Not the least striking aspect of this transference of the art of one country to another was the growth of a new expression of the Renaissance. This was due primarily to the grafting of classical details on to mediæval designs. While mediæval craftsmanship persisted in all parts of France, the assimilation of arabesques and of classical columns and pilasters for interiors, thereby following external practice, was gradual. The earliest experiments, such as the introduction of modelled stucco, wainscot panelling and richly coffered ceilings of intricate patternings, led in turn to a distinctive and national expression. But French taste had already been prepared for change as a result of the campaigns against Italy under Charles VIII, and also by direct contact with the seaports of Genoa and Venice.

The germs of the new style may be seen in the treatment of French interiors prior to the reign of Francis I, as at Châteaudun, and in the woodwork of the château of Gaillon, but the definite Italian expression did not begin until Rosso and Primaticcio with their followers worked in the district of the Loire. During the seventeenth century French decorative art advanced rapidly until it reached its zenith in the splendours of Versailles. The eighteenth century, however, brought reactions to the Baroque in one direction, and towards classical purity in another. During the reign of Louis XVI the academic manner received a great accession of strength, and was encouraged by the enquiring spirit of the

encyclopædists. Then followed the revolution and the classical revival under the Empire. The nineteenth century brought many fresh revivals and reactions, but the broad spirit of French art was by this time historical.

Reverting to the earlier examples of interior design on the grand scale, the gallery of Francis I at Fontainebleau, by Giovanni Battista di Giacopo, or Rosso, forms an interesting example of the early Renaissance in France. The design of this gallery includes, between the horizontal coffered ceiling and the vertical wainscot-panelled dado, a series of painted panels framed by figures modelled in stucco. The introduction of gilding and painting on certain parts of the stucco was due to the inventive skill of Rosso.

Francesco Primaticcio's success at the French Court was distinguished by his Gallery of Ulysses at Fontainebleau, nearly five hundred feet in length. The gallery or ballroom of Henry II at Fontainebleau, designed by Primaticcio and completed at a later date by Philibert Delorme, follows in order of sequence and continues the style of Rosso. In this magnificent apartment the arcaded treatment supports the geometrical panelled coffered ceiling which is the chief feature, although not part of the original design. The Italian system of wall-paintings forming part of the scheme is evidenced here in architectural order for the first time.

The allocation of architectural units for deep niches, the regulation of cornices, imposts and dado treatments, together with a wooden ceiling framed and constructed *in situ*, demonstrate the abandoning of the mediæval character.

Panelled walls and coffered ceilings are to be found in practically every interior of the mansions of the sixteenth century. At Azay-le-Rideau the coffering is deeper in modelling than the panels on the walls, but its form is sympathetic to the latter. All the panelled spaces, both wall and ceiling, are carved with arabesques. The fireplace of stone retains mediæval importance, the space over the opening displaying a large cartouche with scrolled surround and inset portrait. The apartment of Marie de Medici at Blois presents a similar treatment with classical pilasters to the upper part of the fireplace. The design of the surround to the chamber doorway has features borrowed from Venice. Great variety of design is shown in the treatment of fireplaces during the second half of the sixteenth century. In the Musée de Cluny, Paris, there is a notable example with sculptured terms supporting the upper panel, which is carved, the latter also being framed by figures. Great

skill has been shown in this case in the profiling of the classical cornices to the upper and lower portions. A fireplace conserved at Nancy has a niche for the central feature above the fireplace opening. These fireplaces called for large cast-iron backs as well as for specially wrought andirons and utensils. In addition to the decoration of apartments in palaces and mansions, the artists and architects of the period found scope for their talents in the design of church furniture and fitments. Rood and chapel screens, organ lofts and cases, pulpits and stalls, as well as benches, altars and credence tables, exist in great profusion throughout the country. In the cathedrals of Laon and Bourg, and in the Church of St. Etienne du Mont, Paris, notable fitments may be found.

During the first quarter of the seventeenth century the Netherlandish influence, inspired by Peter Paul Rubens, already mentioned, was experienced. Panelled and painted ceilings, enriched fireplaces with cartouches framed over, and panelled to receive oil-paintings, sometimes pedimented and of low equal proportions, mark a further change. The tendency to reduce the size of the fireplace opening increased the importance of the panelled surface over. Designs in the Baroque manner by Barbet and Alexandre Francini, dating from 1630-1650, have cartouches as dominant features. These designs, although Baroque in inspiration, show a more profound French character than hitherto. In the time of Richelieu and Mazarin, decoration assumed a more noble aspect. The spirit of close enquiry was now in the ascendant and experiments in assembling diverse forms became fewer; as a result, the dignity of interior decoration was enhanced, the stream of tradition was augmented, and the influence of scholarship and authority increased as succeeding architects were commissioned by the King and the Court. The Flemish Baroque influence was bound to decline in direct ratio to the renewed studies and travels of French architects and artists in Italy. The publication of authentic treatises on the art, and improvements in illustrating works dealing with architecture, such as Fréart's parallels of the Orders, were likewise of value in co-ordinating ideas. Finally, with the accession to supreme control of Louis XIV, Paris became the artistic centre of Europe.

The great intellectual progress so characteristic of French thought in the seventeenth century was communicated to decoration and the ancillary arts. The movement towards a definite academic manner is best seen in the designs of Jean Le Pautre. The main features of this

artist's work were the introduction of a pilaster order for interiors with moulded architraves to the doorways. Above this was the superporte, usually an oval or a roundel of regular shape with supporting figures; the rectangular panels above the dado having elliptical wreaths framing oil-paintings, generally landscapes. While it is possible to discern the original assembling of ornaments as designed by Rosso, their rearrangement belongs to the seventeenth century. This aspect of traditional observance is most important in any study of French decorative art. Fireplaces retain florid outlines, but the divisioning of the parts shows greater study, the upper panel over the opening being reserved for a painting. The architectural superporte, in place of a roundel or cartouche, now appears as a finish for internal doorways. Similar principles for the design of fireplaces were followed by Le Brun, particularly for his work at Versailles. Ceilings during this period were divided into regular compartments, often with quadrantal corners, large elliptical centres and enriched angles, festoons, bay-leaf ornamentation, paintings and figures in relief completing a variety of schemes. Coves are sometimes introduced between the ceilings and the wall surfaces.

All these and similar productions were outclassed by the masterly handling of the interiors at Versailles by Le Brun. In the *Galerie des Glaces* the orderly repetition of an arcaded wall treatment is checked by the horizontal cornice from which springs a barrel vault. This vault in turn is subdivided into compartments with curved ends and medallions. The mouldings are reduced in scale, and the whole scheme reveals majestic opulence.

Under Louis XIV many refinements were introduced, but in the treatment of apartments and the design of furniture Colbert commissioned Lucas de Nehou to take in hand the royal manufactory of glasses, and thereby made possible the increased size and decoration of mirrors. The borders of wainscotings were enriched and woodwork was carved and gilded. Everything decorative, from walls and ceilings to accessory furniture, was made the subject of bold style and extraordinary craftsmanship. The designs for arabesques by Berain were emulated by every lesser decorative artist. There was scope for the joiner, the worker in metal, the carver and the assembler. This reign not only threw considerable *éclat* on the arts during the first quarter of the eighteenth century, but was established as the zenith of absolute monarchy. It was the rigid observance of etiquette at the Court of Versailles that deter-

mined the proportions of rooms and their decoration elsewhere. The style of the Court, therefore, was followed on a descending scale for the houses of the nobility and the various grades of the bourgeoisie. Under J. H. Mansart fireplaces became simple—in fact, were little more than low marble surrounds with slight shelves to support a mirror and the usual garniture. Doors to small internal apartments were made in two leaves with a superporte panel over. Greater attention was given to the planning of staircases, and to the design of metal balustrades of continuous curvature. The suite of apartments at Fontainebleau, occupied by Madame de Maintenon, the large rooms in the Grand Trianon and the state bedchamber at Versailles, with the attendant *œil-de-bœuf*, are typical of the variety of treatments. In most of these examples the classical framing of the parts by means of pilasters and columns is still the fashion. Attention also should be given to the magnificence of church fittings, such as choir stalls, reredoses, pulpits, altars and baldachinos. To name a few examples, the great reredos of Notre Dame, Calais, the baldachino in the Cathedral Church of St. Wulfran, Abbeville, and in Paris the altar and reredos of St. Nicolas-des-Champs.

The style of Louis XIV not only expresses the absolutism of the monarchy, but the unification of central authority. It is symbolic of the aristocratic system of which it formed the background; moreover, it is representative of collective thought aiming at a general academic ideal in interior decoration. The style is theatrical in the majority of its moods and quite removed from ordinary life and customs. The contrast between the finely composed and exquisitely decorated interiors of Versailles and the simplicity of Madame Waren's apartment at Les Charmettes is equally to be seen by comparing a landscape by Poussin with a domestic study by Chardin. Between such extremes there are the innumerable varieties of treatment in the châteaux of France which were remodelled at this period. The introduction of double curvatures, crowning panels over fireplaces or doors, or framing bed recesses, not only contrasts with the rigid use of the orders, but heralds the subsequent reaction to the more florescent style of the Régence and Louis XV; such is the case in the principal bedchamber of the Château de Wideville (Seine et Oise).

The death of Louis XIV in 1715 brought changes into the life of the Court. During the period of the Régence there was a transition towards greater freedom in art accompanied by a reaction in favour of

nature, and a desire to establish new conventions. The era of the *salon*, the small apartment for dining and study, the music-room and the boudoir had now arrived. The reduced scale of living-rooms was not without effect on decoration and furniture. The orders of architecture were looked upon as too monumental to give character of privacy to decorative schemes of limited size. The development of curvilinear forms already mentioned, the avoidance of sharp corners and the general desire to encourage caprice led to an astonishing display of originality. Not only were projections reduced and mouldings flattened, but sculptured decorations were replaced by paintings. The decorations designed by J. Verberckt, in Louis XV's bedroom at Versailles in 1738, as well as those by A. Rousseau, in the Council Chamber, a few years later, are indicative of the growing taste for novelty. The main theme now was to soften the lines surrounding panels, and to play upon contraflexure of curvature as often as possible. The style called "*Rocaille*" has everything in common with shell work and incrustations. The backgrounds of panels enclosed in this manner are frequently enriched with reticulated *treillage* and towards the end of the period net-like patternings in panels. Another element is the palm ornament, which can be seen surrounding the mirror frame of the Duchess of Maine's music-room (now library) at the Paris Arsenal.

Yet another development was the introduction of Chinese motifs, Pastoral scenes and "*singeries*," arabesques by F. Cuvillier senior, animal paintings by Desportes and Oudry, decorative paintings by Audran, Gillot and Antoine Watteau, expressed the daintiest phase of decoration. The Cabinet de la Pendule at Versailles, designed by J. Verberckt in 1738, is regarded as one of the outstanding examples of the style. The wall surfaces above a low dado are divided into panels with curved extremities and arabesques of rosace form at the centres. The slightly coved ceiling is brought into contact with the upper portion of the walls by means of slight floriated decoration. The marble fireplace is low, and the mirror over has a frame shaped to harmonize with the contiguous panels. The great oval saloon in the Hôtel de Soubise (now Archives Nationales), Paris, designed by G. Boffrand in 1735, is an even more engaging essay in harmonious curvature. The oval plan is repeated in the demi-oval bends of the vertical panels, the mirrors and the niche-like doorway. Sinuous curvatures are continued completely round the salon to frame painted scenes in the several spandrels. Above

these spaces painted tripods merge the wall and ceiling treatments into harmony. The ensemble is singularly unified and satisfactory in its effect. The principal characteristic of this form of interior decoration is in rhythmic ordonnance of panels when the straight line governs the more playful fancies. It was the observance of the structural principles of joinery craftsmanship that led to the relation of straight-lined framings.

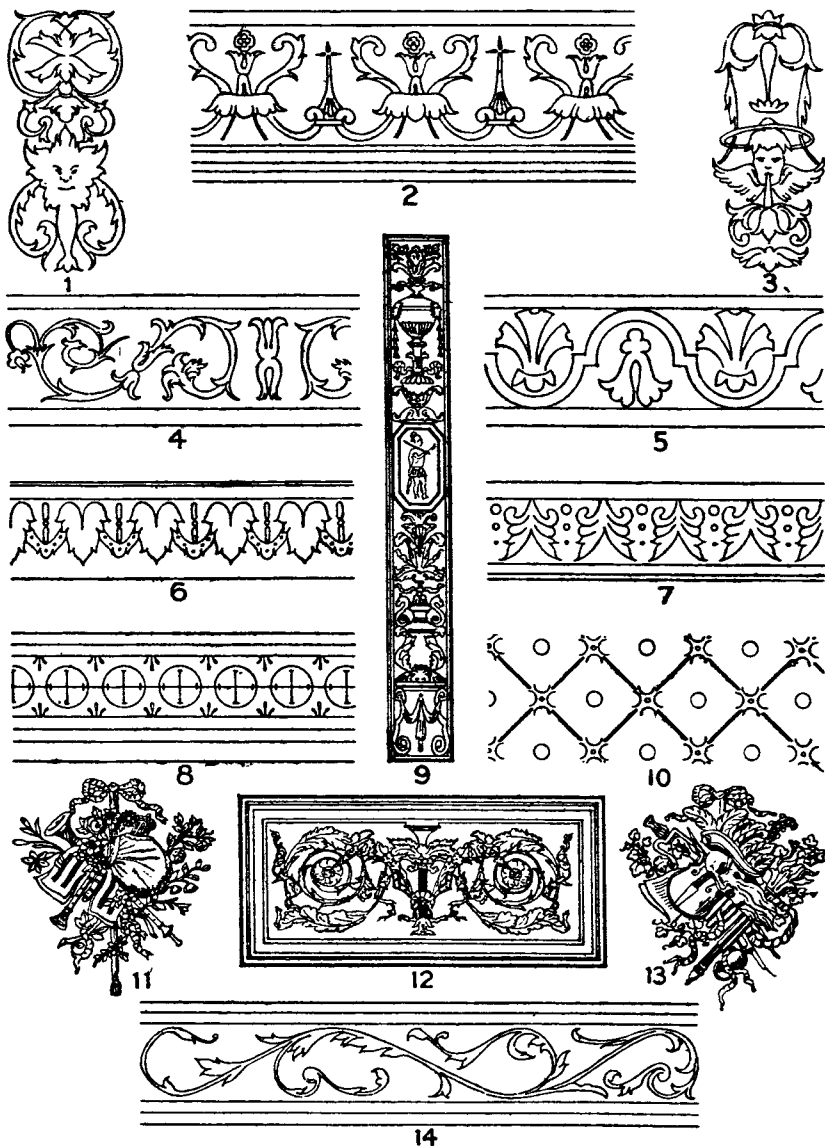
Fantastic compositions by G. M. Oppenordt and J. A. Meissonnier emphasize regard for more voluptuous plastic forms. Both these artists were masters of balanced grouping in design. The full value of Meissonnier's skill is to be seen in the character of French silverware of the period. By the middle of the eighteenth century there was another reaction which favoured a return to academic purity, and this was expressed at first in a Vignolian rococo compromise. In other words, there was a restatement of the old principles practised by the later architects of Louis XIV's reign, namely, stronger architectural framework and free decorative embellishment. This reaction, at first expressed in the treatment of exteriors, was soon communicated to the design of internal apartments. The academic architectural treatment was once again made popular, the reason for the change being the more philosophical attitude of the ruling classes continued with nationalistic tendencies. Designs by J. F. De Neufforge show the use of Corinthian fluted pilasters with a full entablature from which springs a large cove. At Versailles the cabinet of Louis XVI, decorated by the brothers Rousseau in 1788, shows a panelled wall surface above a panelled dado, finished with a strong denticular cornice. Ornament is now strictly classical; the chimney-pieces are kept low with terms or consoles at either side, and richly decorated cast-iron interiors; mirrors of large size, over the fireplace, are kept reticent in outline. In place of arabesques for panel decoration, classical conventions inspired from Pompeii, such as those designed by the brothers Rousseau in Marie Antoinette's private apartments at Versailles, were favoured. Colour for interiors was almost invariably kept cool and slight. Apartments were decorated in grey, white and gold, silver, rose, eau-de-Nil and several tints of very pale green. Great richness of surface decoration was allowed, as in the decoration of the door and the panels in the boudoir of Marie Antoinette at Fontainebleau. It was a period of symmetry, one encouraging the restudy of Roman ornament as well as the designs of Raphael. Medallions, classical sphinxes, tripods, candelabra and semi-naturalistic scrolls

form the basis of many panel treatments. Among the designers who specialized in decoration are the following: Cauvet, de la Fosse, Boucher the younger, Salembier and Prieur, whose designs show the influence of Piranesi's engravings. The painters include Hubert Robert, Pillement and Ranson, the latter famous for classical arabesques.

Among the skilled woodcarvers the most prominent were Antoine Rousseau and his sons. The sculptors' names are equally representative: Clodion, Pigalle, Falconet, Caffieri and Pajou. It is, however, in the exquisite designs of the metal-workers Gouthière, Forty and Philippe Caffieri that the style reached the assay mark of intrinsic perfection. The leading cabinet-makers include Roëntgen, Riesener and Oeben.

It is clear that under Louis XVI refinement and simplicity in design and detail reigned supreme. Not only were decorative forms restrained, but they were "metalled" with the most delicate ornamental details. Simple coatings of paint relieved by pale lilac or sky blue in the flutings distinguish alike panelled walls and furniture. The petits apartments and diminutive salons of this period, hung with silk tapestry, are the most piquant contributions to the art; the tops of mirrors over fireplaces, often embellished with trophies of dove and torches, the reintroduction of cornices with modellings and other classical details, such as the key and the guilloche, being typical. Console tables with white marble tops, furniture covered in pale figured satin or in striped chenille; *garniture de cheminée*, consisting of a fine clock with attendant candelabra, reveal the triumph of simplified taste. On the great scale interior decoration assumes a more robust aspect; for example, the design of the interior of the Royal Opera at Versailles by Jacques Gabriel. Here the giant Corinthian ordonnance of the stage is continued to the main tier of boxes, a lesser ordonnance of Ionic columns standing on pedestals and connected by a continuous balustrade frames the internal sweep of the boxes and the upper gallery. It is difficult to quote an interior of more intimate grandeur and majesty than this particular U-shaped eighteenth-century example. The diminutive theatre designed and built for Marie Antoinette at the Petit Trianon by Mique is a more delicate design which is not widely known. Finally, there is the magnificent theatre at Bordeaux, designed by Victor Louis, where proscenium and auditorium are brought successfully into harmonious unity. Other perfect interiors may be seen in the prefecture of the same city.

The church interiors of Louis XVI's reign favoured the use of the



FRENCH RENAISSANCE ORNAMENT

1. FROM THE CHURCH OF THE GRAND ANDELY (1520).
2. MARBLE CARVING FROM BASIN OF FOUNTAIN OF CHÂTEAU GAILLON (LOUVRE).
3. FROM THE CHURCH OF THE GRAND ANDELY (1520).
4. 5. MARBLE CARVING FROM BASIN OF FOUNTAIN OF CHÂTEAU GAILLON.
6. BORDERS OF VESSELS IN LOUVRE.
7. BORDERS OF VESSELS IN LOUVRE.
8. LIMOGES CHAMPLEVÉ ENAMEL (HÔTEL CLUNY).
9. PANEL, INSTITUTION POMPÉE, IVRY-SUR-SEINE (LOUIS XIV).
10. FROM ARMOUR OF FRANÇOIS II (LOUVRE).
11. MOTIF (LOUIS XIV) MAIRIE D'IVRY.
12. PANEL ABOVE DOOR, MAISON DE CAMPAGNE (LOUIS XVI).
13. MOTIF (LOUIS XV) MAIRIE D'IVRY (SEINE).
14. FROM THE CHURCH OF THE GRAND ANDELY (1515).

classic order. The wrought-iron screens, stalls and altars of this period are of great beauty, as evidenced in the chancel at Amiens Cathedral.

The style of decoration from 1760 to 1790 exactly expressed the changing intellectual outlook. The formation of a new school of design, which encouraged a restudy of classical prototypes, was in complete accord with the encyclopædic spirit. The designers succeeded in correlating the various branches of art to their new theories, and in this they were aided by the patronage of the Court and of the nobility.

It is to those artists especially who were engaged on the design of interiors and furniture that we owe the biggest debt. Their masterpieces of decoration and ornament still represent the finest achievements of an age rich in culture. In the formation and development of the Louis XVI style the influence of contemporary English taste was not inconsiderable. Conversely, French taste reacted on the minds of English architects and artists. In no instance was this more pronounced than in the work of Sir William Chambers and Henry Holland. While it is true that the designs of Neufforge exercised an influence over contemporary English art, it was the published works of the Adam brothers that provided a stimulus for French designers.

Matters, however, were moving rapidly towards a *dénouement* destined to reconstitute every grade of French society. In Paris down to the very eve of the Revolution all was charming. Elegant coaches passed over the stones of the streets carrying the élite to salons and theatres. By day the promenade, the tea-party *à l'anglaise* or the *fête-champêtre*, at night the brilliance and the variety of countless assemblies. It was the new habits of society that gave rise to the designing of elegant interiors and furniture. Debucourt's enchanting coloured drawings depict the passing scene in a manner denied to any other media. Little do these records of the limner's skill indicate that society would soon be disrupted and that the old traditions were on the eve of overthrow.

Reviewing the position of French art after the death of Louis XVI, it is found once again passing through a transitional period. The style of the Directory aimed at novelty, but could not escape a traditional bias. The style of the Empire, on the other hand, is distinguished by a positive searching for new ideas. The peculiar and remarkable distinction which is the mark of this essentially neo-classical movement is that it was the expression of political and military achievement. Broadly speaking, the style of the Empire follows the rules and observes the

canons of French academic art which preceded its innovation by a few short years. There is the same regard for scholarship, the same nicety of proportion and intuition for elegance in the divisioning of wall surfaces which are to be found in the interior decoration of the style of Louis XVI. But the ornament is shallower, the contrasts of light and shade less subtle and the scale is less generous. On the other hand, there is a rightfulness of composition and a simplicity which overcomes difficulties in the most daring and most ingenious manner. Among the causes which changed the artistic outlook was the suppression of the Academy School of Architecture which led to the founding of a private one by David, Le Roy, A. L. T. Vaudoyer, L. P. Baltard and eventually Percier and Fontaine. The reorganization of architecture and decoration under such able direction was bound to follow on classical lines. The taste which brought ornaments from the Nile, to reinforce the more usual and more intelligible classical exemplars, on the other hand, was due to the Egyptian campaign. The chief factor, however, which gave an entirely new character to decoration was the control of parvenu taste by architects and decorators trained under the old régime. The chief exponents of the Empire style were the architects Percier and Fontaine, who not only invested their works with an attractive reticence, but through their famous book of designs influenced contemporary taste throughout Europe. These two architects were introduced by Jacques Louis David to Napoléon Bonaparte, and they became the virtual directors of taste during the Consulate and the Empire. But it was their supervision of furniture, upholstery, plate, china, tapestry, carpets, wall-papers and miscellanea that made them supreme arbiters. The unity of the Empire style, in its ramifications no less than in its consistent intrinsic qualities, can be attributed to these two distinguished architects, whose case is somewhat analogous to that of the Adam brothers in England at an earlier period. Fontaine's experiences as a decorative designer in London evidently stood him in good stead. Decorative interiors by Percier and Fontaine can be studied in the palaces and private mansions of France, particularly Compiègne, Fontainebleau, Trianon and Malmaison. The Hôtel Beauharnais and the Hôtel de Pologne, Paris, are among other examples. At Autun in the Hôtel des Postes the bedroom and furniture used by Napoleon are typical of the lesser examples of the period. In Spain the palaces of Madrid and of Aranjuez contain apartments designed by Percier and Fontaine.

Of all the examples of the Empire style of decoration, Malmaison, the Trianon of the Consular period of Napoleon's career, is the most attractive. In this beautifully appointed mansion the decorative treatment of the interiors varies from the severely designed hall, i.e. Salon de Stuc, to the architecturally schemed Study, or the exquisite Salon de Musique. The scope of the treatment of the lesser apartments at Malmaison also proves the versatility of the designers and the flexibility of the style itself.

At Malmaison the merit of the design of the Study is the arrangement of four open pylonic groups of Doric columns standing on solid pedestals. Each group of open pylons is connected in a lateral direction by a segmental arch. The main volume within the pylons is spanned by a segmental ceiling with intersecting vaults on either side. At one end the plan of the room is resolved into a semicircle. The colour scheme is restrained to a degree; the columns and the book-cases are of mahogany, the curtains are of green material edged with gold, the painted decorations on the plaster ceilings suggest Pompeian prototypes. In the music-room the perfection of colour harmony extends to the smallest details; there is no finer example of an interior similarly richly simple. The sleeping-apartments at the first-floor level are of attractive proportions. The paintwork is finished to a rose grey and the walls are hung in some cases with printed stuffs having a delicate pattern. Following the example of the preceding reign, fireplaces are of marble and of low proportion, the space over the fire opening being occupied by a mirror having side pilasters, entablature and a super panel carrying the relief background to the cornice of the apartment. One of the finest examples of chimney-piece treatments of this epoch is to be seen in Napoleon's study at Compiègne.

At Rambouillet, the Salle de Bain designed for the use of the Emperor Napoleon is among the most delicate compositions of the period. The treatment of the recess for the bath recalls the pylonic arch unit employed at Malmaison. Pilasters are used to panel the wall above the dado, and to carry a slight entablature. Above, there is a painted frieze of swans and chimerae, and over this another frieze, also in colour, composed of lutes, palms and honeysuckle. The wall panels are enriched with roundels of Vincennes enamel and a variety of trophies. It is the delicate cameo interest of the sub-features and their subordination to the strong architectural theme that give this bathroom distinction.

The interior decorations of the Hôtel Beauharnais, Paris, are less rigid and on a bolder scale. The Salon des Saisons is a lofty room twenty feet in height; the walls are divided by Corinthian pilasters of slight projection standing on a panelled dado; the entablature is enriched with a frieze of Imperial eagles and festoons; the ceiling is patterned geometrically and has sub-decorative scrolls; four of the large wall panels are filled with paintings of the seasons, mirrors occupying the other spaces. The ensemble is unified by a magnificent lustre depending from the centre of the ceiling, and the circle in the centre of the Aubusson carpet further emphasizes the rectangular proportions of the room. The finesse of this style is evidenced in the care given to perfecting minor details, especially the ormolu fittings. Outside France the style of the Empire found many imitators, particularly in Russia. The castle of Ostankino near Moscow can be cited as an example of the teachings of Percier and Fontaine.

After the peace of 1815 the Empire style lost vitality, and its principal features were continued in a weak manner for a decade. Such was the dissatisfaction that about the year 1830 a new coterie of designers entered the lists determined to assert a fresh revival of classical art and decoration. The Neo-Greek school, among whom the chief exponents were Hittorff, J. L. Duc, Labrousse and Vaudoyer the younger, sought to express Greek detail and decoration in connection with the new use of cast iron for construction and ornament. The interiors of the Palais de Justice and the Bibliothèque St. Geneviève, Paris, record the expression which was fashionable down to the year 1850.

Other architects and designers also endeavoured to prove that the French tradition far from being exhausted was still capable of extension. Viollet-le-Duc was the foremost to oppose his scholarly and logical theories to all such ideas, but his bias towards mediæval architecture was too strong even for the French Romanticists. From 1850 onwards French decoration followed revivals of various Renaissance styles; finally the Exhibition of 1900 encouraged a return to the classical manner of the reign of Louis XVI. For the next fourteen years the apartments of almost every large building in France were decorated after the style of Rousseau or Neufforge. The century from the time of Napoleon produced many important buildings and notable interior designs, all closely related, but the conscientious spirit of the eighteenth century had vanished, the old splendour could no longer be recalled. Put briefly, all

DECORATIVE COMPOSITION IN ITALY, FRANCE AND SPAIN

spiritual movements of strong character in the life of a nation are usually accompanied by political reforms. The Italian Renaissance, for instance, changed the religious aspect of Gothic art by the introduction of humanistic conceptions. The Renaissance itself was in turn subjected to intensive analysis and modification. Not only was it subject to each political innovation, but it became the vehicle whereby the social grades were expressed in terms of art.

In France the extension of experience and the greater understanding of humanistic art in the sixteenth century prepared the way for the moulding of a national style. This new spirit found a vent in the decoration of palaces, and in the course of two centuries was transferred to the small apartments of private citizens. Finally, in the late eighteenth century, there ensued the comprehensiveness which is the highest pinnacle the art of decoration in France attained. The Revolution is but another stage leading to the military subjugation of art. In the nineteenth century political dissension led to impoverishment of art inspiration and fruitless dalliance with the dead styles. From the foregoing can be deduced that the progress of art is affected more by external forces than by the collective efforts of those who combine to cultivate it. But it is equally true that the individual designer in predetermining his plastic form falls subconsciously under the influence of extraneous forces. Zola's remark that "Art is the world seen through a temperament" is apposite.

Modern French decorative art, at its best, attempts to substitute intelligent evolution of humanistic ideals for the imitative methods of the nineteenth century. Its workings towards simplicity of colour and form are indicative of a desire to attain intellectual superiority. Modern decorative art derives its motive force from harmonies of colour, proportion, texture and elimination of obtrusive features.

SPAIN

Spanish decoration assumed a classical character, wholly national, with the first reduction and conquest of the Moors. The discovery of America, the conquest of Mexico, and the subsequent opening up of the mines of Peru had given Spain new sources of wealth. To the traditions of building dating from Roman times had been added those of Islam, such as the monuments of Granada, Seville and Cordova. To what extent these influences were blended and developed

with the advent of the Plateresque, or jewellers style from Italy, will now be discussed, the ultimate destiny of Spanish decorative art during the sixteenth, seventeenth and eighteenth centuries being indissolubly connected with these early changes.

During the reigns of Charles V and Philip II, who succeeded him in 1555, the most simple and perhaps the finest Spanish interiors were contributed. The important influences came from Italy and Flanders. Until the beginning of the seventeenth century the great majority of Spanish artisans were Moors, and the intermingling of the Arab with the Christian point of view was productive of the style now called Mudejar. A fine example of this style is to be found as far north as the Castle of Frias at Burgos. The design of the interiors at Penaranda Del Duero are fine specimens of the interweaving of the various influences described. Put briefly, the Mudejar style consists of white walls and carved plaster friezes, highly wrought and painted wooden ceilings, the use of ceramics, of polychromatic values and windows shuttered internally.

The ground-floor salon in the palace of the Duke of Alba, at Seville, is one of the most representative examples of the style. The beamed ceiling richly decorated, the carved stucco frieze, the panelled doors and shutters, the tiled floor and skirting, combine to form a rich ensemble of subtle contrasts of colour. In the south of Spain fireplaces are rare in living-rooms; the dining-rooms have tiled recesses to receive cupboards. Among other features inherited from the Moors and applied to decorative design, the following are interesting: canopies, silk hangings, wrought and gilded nail-heads on furniture and doors, and especial features such as wrought-metal lamps suspended on lengthy chains from the "Artesonado" (Moorish ceiling). The tiled treatments (Azulejos), derived from old Saracenic times, stamp an early interior as being essentially Hispano Moresque. No better example can be cited than the Casa de Pilatos in Seville.

The tiled ground floors of Spanish houses, where the occupiers live in the summer, are abandoned for the first-floor apartments in winter, where tiles are seldom seen. Regarding the design of decorative tiles, the early Moorish types are of geometrical patterns as permitted by the Mohamedan religion. Moorish Spain, however, encouraged the floral or animal patterning. These designs were superseded in the sixteenth century by the "Pisarcos," namely, yellow backgrounds and freehand

paintings of blue conventions. Even in the simplest houses the treads and risers of staircases were tiled, the nosings of the treads being formed of wood. In the palace of Don Miguel Sanchez-Dalp, at Seville, the walls of the staircase are treated with plaster patterning. The chief feature of early Spanish decoration of the Hispano-Moresque style was the ceiling or *artesonado*. This treatment falls under four classifications: (a) Flat ceilings with coffers or beams, the latter often supported at the extremities by a carved bracket. (b) An open timber framing with elaborate tie beams and double hip rafters. (c) A central flat ceiling with canted sides of equal dimensions. (d) The polygonal sectioned type, giving the effect of a barrel vault or dome. From these types there was evolved, by the addition of classical detail derived from Italian sources, the magnificent series of ceilings of the late sixteenth and seventeenth centuries. In Catalonia and Majorca the old traditions lasted, but in Castile during the eighteenth century French influence asserted itself.

Turning once more to the question of Italian art influence on the Spanish character, a remarkable concurrence of civic and monastic zeal, aided by royal patronage, ensued. Philip IV, King of Spain, recalled from Naples a young Spaniard, Ribera, who had been a pupil of Caravaggio. The latter, together with a mystic Cretan named El Greco, who had been a pupil of Titian, were the chief pioneers of the later spirit of the Italian Renaissance in Spain, and their labours prepared the way for the acceptance of the Baroque. Previous to this, Philip II had ordered the building of the Escorial near Madrid, and earlier still the great Emperor Charles V had begun the palace at Granada to commemorate the final subjugation of the Moors.

The building of the Escorial, half palace, half monastery, by Philip II in 1562, is the true foundation of matured Renaissance art in Spain. The King exercised an enormous influence in the design; the acting architect was Juan Bautista de Toledo, who had studied at Rome and Naples. After the death of this architect the work was carried out by his famous pupil and assistant Juan de Herrera. Under the circumstances, the arts could not fail to respond to such active patronage and enthusiasm. The course of events included the design not only of the interior of the church, but the embellishment of the royal apartments and the library of the monastery.

Among the most remarkable interiors are the sacristy and the chapter

rooms with their elliptical painted vaults, the chief architectural interest being the interpenetration of the lucarne windows on one side and rectangular panelled openings on the other. A similar treatment, but with a barrel vault with paintings, occurs in the library of the monastery. In these three designs the motive of the double arch as an incident in the vaulting system is retained. The introduction of a fluted Doric order to frame the bookcases in the library of the monastery can be regarded as a concession to the theory of an internal colonnade, introduced for scenic effect. The greatest scope was also given to artists by the authorities who directed the fortunes of the Spanish Church. New choir stalls, splendid altars and magnificent reredoses distinguished the cathedrals of Toledo, Murcia and Burgos.

The peculiar circumstances under which Spanish art of the Renaissance rose having been explained, it becomes essential to turn to the seventeenth century, when Baroque art was developed. Churriguera, the architect, created the truly national expression in this connection, and from now onwards Spanish decoration became more robust. It was the architect's liking for polychromatic decoration that led to those extravagances which have earned the name Churrigueresque. A new dynasty, the Bourbons, was now in power, and the interiors of the Royal Palace at Madrid were entrusted to Giovanni Sachetti, who was appointed by Philip V at the instigation of the architect Juvara. Sachetti, assisted by Don Ventura Rodriguez, adapted Bernini's rejected design for the Louvre, Paris, for the new Royal Palace of Madrid. From now onwards French influence predominates in the decorative arts. The results of this combination of events during the next two centuries were further influenced by each successive fashion of French art, a process continued from the time of Louis XIV to the epoch of the Empire. Searching for an outstanding example of the Spanish Baroque or Churrigueresque style, the interior of the sacristy of the Cartuja at Granada, 1724-64, is the first to be considered. In this fantastic treatment of free modelling, Moorish intricacy of pattern designing is barely concealed beneath a voluptuous display of scrolls, breaks and moulded panels, the basis of the design consisting of an arcaded order and a dome. The architect, Luis de Aravelo, spent thirty-seven years in the execution of this masterpiece. The carving was left to a monk, Jose Maniel Vasquez, who spent thirty-four years inlaying with ivory the cedar-wood cabinets, and other decorations in which ebony, silver and tortoise-shell were employed. This remarkable

production correlates the two extremes of Spanish historical decoration. In the design of the interior of the great cathedral of Santiago de Compostella, by Fernando Casas y Novoa, a pupil of de Andrade, is the magnificent Capilla Mayor, with the high altar made of marble, jasper and silver, designed by Figuera in 1715, a design which ranks as the finest Baroque example of its type.

Spanish decoration of the eighteenth century, while mainly French in derivation, as can be seen in the Royal Chapel of the Palace at Madrid, or in the monumental design of the Hall of Columns, nevertheless retains Spanish character. The Throne Room in the Royal Palace, Madrid, presents an extraordinary version of the Baroque in lighter vein. The ceiling is decorated with allegorical subjects, the walls are hung with rich material and embellished with large mirrors. The focal point is the canopy and the throne, with attendant lions on either side of the dais. The Gasparini ante-chamber announces the style of the Empire, while the manner of French Rococo is reserved for the Gasparini saloon with its walls and ceilings tortuously enriched. On the other hand, the famous porcelain cabinet recalls the earlier use of ceramics as the chief attributes of the wall decoration. In this case the bias of the design favours the style of De la Fosse, a similar note being followed in the Hall of Mirrors.

A summarized description of the main features of Spanish decorative design would be incomplete without reference to the splendid wrought-iron work which distinguishes all periods of Spanish art. This branch of the crafts upholds the loyalty of Spanish artists and craftsmen to national traditions as nothing else does. Of the beauty of the workmanship, no less than the novelty of the designs, the examples are certainly matchless. It was in full strength in the sixteenth and seventeenth centuries, and its spirit permeated not only silverware but utensils of everyday use. Window grilles (*Rejas*), covering the interiors or exteriors of openings, church screens, pulpits, lamps and even damascened furniture, locks and door knockers, show Renaissance details. The iron-work at La Granja, erected in 1720 by Philip V in imitation of the work of similar character at Marly, and made by Destriches, is purely French in character. After the introduction of art from the Far East into Europe, by the trading companies formed in Portugal, Andalusia and Catalonia, lacquered furniture became popular. Red backgrounds, and at a later period black, were usual.

But this is not all; the Baroque influence was transmitted in turn, through the agency of Catholic missionaries, from Spain to Portugal, to Mexico, to California and even to Gondar in Abyssinia. In Portugal the full classical Renaissance is best seen in the Palladian treatment of the cloister at Thomar, which was built in 1560. The great period of splendour in Portuguese art belongs without question to the first half of the eighteenth century. Examples exist not only in Lisbon and Oporto, but in such towns as Batalha and Alcobaça, the reason being traced to the wealth of the mines of Brazil.

The Royal Palace at Mafra, designed by a German architect, J. F. Ludwig of Ratisbon, in 1716, followed the principle of the planning of the Escorial, being part monastery and part palace. The diminutive church of Sao Roque at Lisbon, designed in 1742 by Vanitelli, the architect of Caserta, near Naples, is another example of the Baroque manner. Reverting to the treatment of the early Portuguese interiors, the Hall of the Swans and the Hall of the Pegas at Cintra must be mentioned. Built between the fourteenth and sixteenth centuries—that is to say, begun in the reign of Joao I and finished during the reign of Manoel I—the Moorish character of the ceilings is concealed under ornaments and mouldings of the Italian style. Both halls retain magnificent dadoes of tiles. Italian influence has been traced to the advent in Portugal of Andrea Contacci, surnamed Sansovino, as early as 1485, when this architect was sent to King Joao II by Lorenzo the Magnificent.

During the Spanish occupation the style of the architecture followed that of Spain, the influence of the Escorial being dominant. Then followed the epoch during which the Churrigueresque style dominated, and finally the building of the Palace of Queluz, in 1785, by B. Oliverra, which echoes the architecture of Le Brun translated into terms of the Manoelian tradition.

Reviewing the various art movements which distinguish the history of decorative composition in the Iberian Peninsula, and considering them as a whole, extending from the time of Charles V to the beginning of the nineteenth century, a period of three hundred years, the conclusion to be reached is that the grafting of Italian classical details, and later, French, on to native forms, resulted in new life being imparted to regional craftsmanship, and at the same time new and original compositions resulted. The power of the Church, no less than royal and aristocratic patronage, was not restricted in any way where ostentatious display

was concerned. Of the humbler dwellings of the people much could be written. It is in the right adjustment of structural parts, no less than the continuity of planning and arrangement, as well as the sparse furnishing, that shows the taste of Spain, while it is refreshing to encounter similar local characterizations which retain the essentials and first principles of design.

Chapter 13

DECORATIVE COMPOSITION IN ENGLAND, 1500-1900

A REVIEW OF THE progress of the design of interiors and decoration from the reign of Henry VII to the accession of Queen Victoria, a period of more than three and a half centuries, shows the sequence between each successive phase. Looking at this special branch of art merely from the standpoint of history, it is to be doubted if any better results could have occurred except from totally different causes.

During the first quarter of the sixteenth century the power of the Church was restricted, but the wealth of the nobility and the landed gentry was increased by royal gifts of land and estates formerly in the possession of the monastic orders. Another aspect of the changes was that men of yeomen stock were now in a position to rent and to hold land. As a result, the whole standard of living in mansion, manor and farmhouse took on a new character. Hence, during the reigns of the later Tudor monarchs, Edward VI, Mary and Elizabeth, art patronage widened and there was no pause in the acceptance of classical ideas and ornamental designs obtained from abroad. The connection between Renaissance details derived from Italian, French, Spanish or German sources and their application to Tudor buildings is very evident; but it was not until the first quarter of the seventeenth century that early Renaissance design in England emerged in purer form. The new art from Italy was encouraged at first by those in direct touch with Rome. The story begins with the employment of Florentine sculptors in England, among whom Pietro Torrigiano was foremost; the general causes marking the historical beginning of the change of style have already been described. From now on the style of monumental tombs, mural tablets and church furniture, embodies, with

increasing daring, various ornamental quasi-classical details. The tomb of Henry Lord Marney, erected in Layer Marney Church, Essex, in 1523, for instance, includes details suggestive of both Italian and French influence. Chantry screens in stone and wood, bench ends and roof timbers, show how the new fashion was gaining ground. The details of the roof of the Great Hall at Hampton Court are particularly interesting. In 1532 craftsmen were busy preparing the great rood screen in King's College Chapel, Cambridge. This design is exquisite in composition and detail, the mouldings are classic and the finish far removed from crudities of many works of a later date. It is conjectured that an Italian designer had control. The pronounced Italian influence gave way to tentative versions of Italian detail, often obtained at second hand from Germany and the Netherlands. In this regard the panelled work at Eastbury Manor, Essex, records the changes taking place about 1555-60.

At this period the interiors of halls and apartments are usually panelled, furnished with tapestry, and less frequently, as at Eastbury, Ashwell and elsewhere, painted. When the family moved from one ancestral manor house to another it was the custom to take the tapestry hangings and certain articles of furniture with them. The finest tapestries of the early Tudor period are those at Hampton Court. Wood panelling being of more permanent character remains in position, and can be studied in all parts of the country. The earliest forms of "wainscot," or best oak panelling, was of the linenfold design. This form of carving in low relief dates from the fourteenth century and was used during the early period of the Renaissance in England. The method of covering the walls with oak was known as "seeling" a room, this term being employed as distinct from roof or ceiling treatments. Oak wainscot panelling of the time of Henry VIII varies from the linenfold pattern to rectangular forms having roundels with heads carved in low relief, the latter showing the influence of the Spanish Plateresque. The ancient method of moulding the upright stiles and mantings and bevelling or splaying the top side of the horizontal rails was due to practical considerations of construction. The term itself may have been derived from the German practice of framed wood in wagon building. It was not until the early seventeenth century that mouldings around panels were mitred at the angles. The finest specimens of panelling exist at Haddon Hall, Derbyshire. In Elizabethan times pilasters were introduced, as at Benthall Hall, Shropshire. It was, however, at the end of the sixteenth century that the art of panelled

decoration reached its highest attainment, as at South Wraxall Manor, Wiltshire, and at Sizergh Hall, Westmorland.¹ At South Wraxall the uniformity of the repetition of small panels creates a surface treatment of uniform colour which contrasts with the plaster ribs of the arabesque ceiling; there is both grandeur and simplicity in the statement of wall and ceiling unified in this way.

Among the elements of contemporary architecture and interior features are the screens which divide the halls from the butteries. At Trinity College, Cambridge, the screen provides a focal point in the internal composition. Its elaborate decoration is subordinate to a strongly marked vertical and horizontal divisioning. Of the same period, the screen at Woollas Hall, Worcestershire, is more classical in character.

In the early years of the seventeenth century the treatment of the fireplace marks the next change towards more severe classicality. The fireplace opening is still large, the lintel replaces the arch, and elaborate carved terms or fluted columns are introduced to support cornices either of ovolo or denticular section. The space over, while reminiscent of the mediæval hood, is divided into decorative features such as niches, coats-of-arms, cartouches or a range of pilasters or columns with panels between. The room formerly in the palace of Bromley by Bow, 1603, and now at the Victoria and Albert Museum, affords an illustration of this type of design. The more elaborate example at Castle Ashby, Northamptonshire, is another illustration of this theme. Wall treatments of wainscot oak were now framed with small panels and mouldings mitred at the angles. The compromise between mediæval craftsmanship and Italianate compositions and details proceeded without abatement from the reign of Elizabeth to that of James I. The decorations at Hatfield House, which was completed after 1612, record the progress of this important sub-movement. In 1615 the famous room conjectured to have been within the mansion at Houghton, Bedfordshire, was designed presumably for the Countess Pembroke.² The design of this room includes details taken obviously from Serlio's book on the orders. It is interesting to conjecture that the deal of which the room is formed was obtained from Sweden. This is the earliest instance of imported deal being used for a great apartment. While it is difficult to assign the authorship to Inigo Jones, it is legitimate to say that the character of the

¹ A panelled room from Sizergh is now preserved at South Kensington Museum.

² Now in South Kensington Museum.

work is in his early manner. Two important factors have now to be taken into consideration to explain the characterization of English decorative composition during the first half of the seventeenth century. The first concerns the studies of Inigo Jones in Italy, and the second the enormous influence exercised by Peter Paul Rubens, not only on contemporary Flemish and French art, but on English art of the same period. Through the good offices of Balthasar Gerbier, a personal friend, Rubens came to England and was commissioned by Charles I to design and paint the ceiling of the Banqueting Hall, Whitehall. Another example of Flemish influence, Cromwell House, Highgate, has been attributed to Gerbier. This house shows many Netherlandish features, such as the treatment of the staircase newels, which might well belong to the mansions of Antwerp. Gerbier's predilection for Flemish art may well account for the introduction of painted ceilings and richly carved ornaments in English decoration of the period 1625-40.

The abandonment of plaster ceilings of arabesque design and the adoption of the more formal panelled or coffered ceilings by Inigo Jones, John Webb and Roger Pratt, was also due to both Italian and Flemish influence. Among the drawings by Inigo Jones, in the Worcester College collection, are designs for ceilings at Wilton, which are typical of the new forms of composition favouring a large central panel. The adoption of Italian formalism at its best, however, may be seen in the internal treatment of the Banqueting Hall, Whitehall, and later in John Webb's magnificent staircase and hall at Ashburnham House, Westminster. Turning to other features of interest, we find that fireplaces became more prominent as focal points in apartments, while the overmantels were designed as frames to contain oil-paintings. The great period of artistic promise closed sadly, and during the Civil Wars the arts of decoration were practically at a standstill. The impelling force of aristocratic patronage for a time was missing. We turn, therefore, to the Restoration of Charles II for the matured expressions of Renaissance composition and note with satisfaction the development of systematized decoration.

The Restoration, the Plague, the Great Fire and the rebuilding of London provide a sequence of events which resulted in renewed activity. Under the influence of Wren a standard of uniformity for exterior and interior design was formulated. The revocation of the Edict of Nantes, with the resulting emigration of Huguenot artists and skilled craftsmen to

England,¹ gave new force to the arts and crafts. Further, the strong undercurrent of contemporary fashion from France and Holland was not without effect on composition and ornament in England. The outstanding system of decoration, however, was wainscot panelling on the large scale, designed on architectural lines to accord with the character of the building it embellished. At Hampton Court, at Kensington Palace and at the Palace of St. James's the panelling not only retains the lines initiated by Inigo Jones, but continues the tradition of panelling for large and small apartments to ensure warmth and comfort. Panelling, therefore, had the dual virtue of being both useful and decorative.

At Dyrham Park, Gloucestershire, 1689, the wainscot panelling in the hall does not extend to the plaster cornice, the wide frieze over being a feature. In the Hall of Ampthill Park, Bedfordshire, designed in 1694, the panelling extends to the ceiling level.

In the refitting of St. James's Palace, London, the rooms have panelled dadoes, the space over being flat framed to receive tapestries. At the close of the seventeenth century, English and French tapestries were very much in favour for large apartments. In 1721, when the mansion at Hawnes, Bedfordshire, was built for Lord Carteret, the principal rooms were panelled in a similar way.² During the early Georgian period taste favoured painting wainscot oak or deal panelling. From 1670-1730 panelling was used both in town and country for houses both large and small; not only were the principal apartments panelled, but the walls of the staircases, the dressing closets and the powdering rooms. Many of these miniature rooms were elaborately panelled and each had a fireplace. The house built in 1727 for Sir Simon Urlin, at Ampthill, Bedfordshire, is unique in this regard. Fireplace treatments varied from the bold bolection mouldings of stone or wood, which were uncarved, to those of flat type of the time of Queen Anne. The latter form, of stone or marble, usually consisted of flat panelled pilasters with a shaped head and flat-fluted keystone. The fashion of the angle fireplace with shelves over was introduced by Daniel Marot at Hampton Court. This versatile architect was employed almost exclusively by William III. Marot, a refugee from France, on the revocation of the Edict of Nantes went to Holland. Between 1690-1701 he published a number of plates of interior decoration.³ All these

¹ A similar emigration took place to Holland and Germany and Northern Europe.

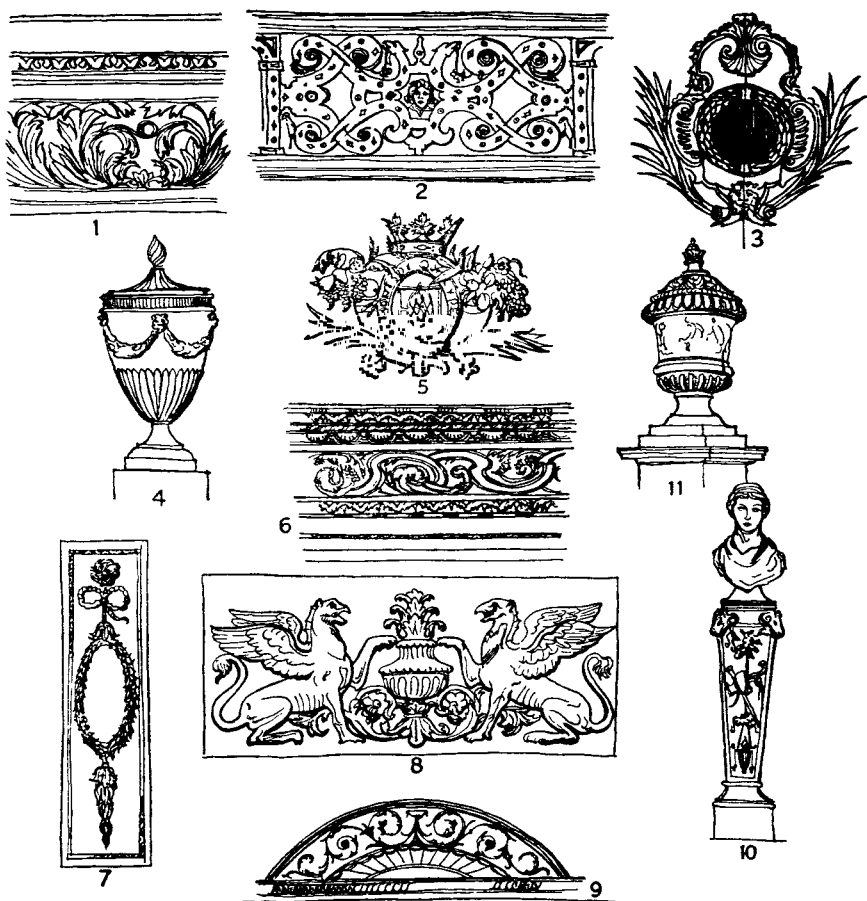
² The tapestries from Hawnes are now in the Jerusalem Chamber, Westminster.

³ See B.M. Catalogue.

designs, French in character, were republished under the title *Recueil d'Architecture d'Ornemens*, Amsterdam, 1712. Marot's designs were immediately accepted by the Georgian aristocracy and their architects. It was, however, left to William Kent to exploit the possibilities of this magnificent contribution to the theory and principles of interior design. Henceforth, until the rise of the more intensive Palladian manner at the will of Isaac Ware, James Gibbs, Sir Robert Taylor and Sir William Chambers, the whole range of English decoration from 1730-1760 shows the influence of Marot's teaching. Many of the woodcuts designed by Kent to illustrate Gay's fables give illustrations of apartments in contemporary taste. The revival of the precepts of Inigo Jones by Lord Burlington and his school in 1730 once again focussed attention on the architectural treatment of interiors.

The Italian stuccatori who were employed at Stowe, Houghton, Great Barrington and other large country houses, and later decorated the mansions of Dublin, introduced the garland and the scroll, as well as modelled masks and figures in relief for overdoors. The reverse of this procedure is to be seen in the French influence on stucco design as exemplified in the House of Charity, Soho, and in No. 5, Bloomsbury Square. While Isaac Ware favoured this fashion of French scrollwork and gilding in the latter and other houses, James Gibbs and Sir Robert Taylor were staunchly anti-Gallican. It was left to Sir William Chambers to model his classical manner on the work of James Gibbs and to amplify his personal taste for rich ornament by referring to the designs of Neufforge. Chambers, who had studied architecture with Clérisseau, thus provides the link between English and French decoration as it was understood at the middle of the eighteenth century. At this period the change from wainscot wall treatments to stucco was general. Mention must be made of the use of parquet flooring introduced from France. This was sparingly used, as, for example, in the quarter landings of the great staircase at Hawnes, and at a later date by Henry Holland at Southill, Bedfordshire. English carpenters preferred plain oak battened floors, a tradition maintained throughout the Georgian period.

The most prolific among the English decorators of the second half of the eighteenth century were the Adam brothers, a trio who descended on London from Edinburgh and engaged in speculative building. The Adelphi and many new streets in the West End of London resulted from their activities. The Adam style embraces not only the design and pro-



ENGLISH RENAISSANCE ORNAMENT

1. PLASTER CORNICE, A.D. 1685.
2. STRAPWORK IN STONE, ASTON HALL, SEVENTEENTH CENTURY.
3. ST. MARTIN-IN-THE-FIELDS, LONDON, CARTOUCHE DECORATION.
(JAMES GIBBS, *Architect*.)
4. VASE BY ROBERT ADAM, 2ND HALF EIGHTEENTH CENTURY.
5. APPLIED WOODCARVING, BADMINTON, A.D. 1700.
6. STAIR STRING. ABRAHAM SWAN.
7. TWICKENHAM, DECORATION OF STAIR LEVEL.
(ROBERT MORRIS, *Architect*, A.D. 1725.)
8. PLASTER FRIEZE, BY BRETtingham, A.D. 1759.
9. CEILING DECORATION, 21 PORTLAND PLACE.
(ROBERT ADAM, *Architect*.)
10. CHIMNEY-PIECE TERM., 19 GROSVENOR SQUARE.
(ROBERT ADAM, *Architect*.)
11. LEAD VASE, WIMPOLE, CAMBS.
(ROBERT ADAM, *Architect*.)

portion of rooms, but every aspect of furniture and appointments. The plans of rooms designed *en suite* show acquaintance with the geometrical formation of the ancient Roman baths, while the patterings in low relief on ceilings, walls and panels can be traced to Pompeiian sources. The exaggerations of long-necked capitals, rich flutings and pateræ for friezes which distinguish the work of the Adam brothers may be traced to the remarkable sixteenth-century architect, Andreas Coner. Flat-relief repetitive patterns were introduced for reasons of economy; pale colour washes to unify and contrast the effect of interiors now became necessary. For smaller apartments printed wall-papers were now usual. Flock papers had been invented as early as the year 1730 and these imitated Italian cut velvets. Expensive Chinese wall-papers were imported from the Far East; these represented exotic birds, flowering shrubs or industrial scenes, and were reserved for special rooms.

Reverting to the French style favoured by Sir William Chambers for interiors, the Registrar-General's Office at Somerset House is representative. While the treatment of the wall panelling in stucco is reminiscent of the earlier work of the century, the ornamental treatment of door heads, coved ceiling, garland wreaths and painted panels, recalls the work of Gabriel at the Petit Trianon. Chambers, however, in all his works retained the masculine impress inherited from Inigo Jones, and it is largely due to him that the Palladian school flourished so long.

Previous to this Sir Robert Taylor, in his design for the Court Room at the Bank of England, had anticipated to some degree the decorative recipes of the Adam brothers. It is of interest to learn that Thomas Leverton employed a young Italian, Joseph Bonomi, to design the interiors of the houses in Bedford Square, Bonomi having been induced to come to England by Robert Adam. Later on, Bonomi was to enjoy a considerable reputation and to figure as the fashionable architect in Jane Austen's novels. Both Samuel and James Wyatt extended the Adam manner, the finest example of James Wyatt's domestic interior work being the apartments of the Queen's house at Frogmore, Windsor.

More germane to the subject of English decoration and furniture design is the career and work of Henry Holland, especially between the years 1770 and 1806. The influence of this great artist provides the connection between the Græco-Roman tendencies of the third quarter of the eighteenth century and the style now called Regency. His most important commission, the remodelling and furnishing of Carlton

House for the Prince of Wales, contained apartments in the French style undoubtedly inspired by Guillaume Gaubert. Horace Walpole, commenting on the new work, wrote: "There is an august simplicity that astonished me. . . . The portico, vestibule, hall and staircase will be superb and to my taste full of perspectives, the jewel of all is a small music room, that opens into a green recess and winding walk of the garden." Although Carlton House has long vanished, drawings by Wild give a permanent record of the series of royal apartments which have never been surpassed in unity of effect. These designs show an English adaptation of the style of Louis XVI, especially the crimson drawing-room with its equal divisioning of the walls on the window side into piers and openings, linked by festooned drapery, a scheme continued all round the room. The cove and the ceiling are panelled and enriched with classical motives, the carpets and furniture being designed *en suite* with the decoration. The treatment of the Throne Room was even more in the spirit of the contemporary French manner. The ante-chamber with its crimson carpet worked with the Royal Arms at the centre, was designed especially to receive full-length portraits. The use of festooned drapery immediately below the cornice is evidenced in the treatment of the Rose Satin Drawing-room. Holland was a man of fastidious taste; among other works he was responsible for the State Apartments at Woburn Abbey, and for the magnificent rooms at Southill, both works dating from 1794-5. In 1777-8 Holland, still a young man, captivated the taste of the aristocracy by his decorations at Brooks' Club, St. James's Street, London. The Great Subscription Room, with its segmental ceiling, the treatment of the doors with the superportes, the freshness of the mouldings and detail, demonstrates his manner to have been quite distinct from that of his contemporaries.

The chief work of his pupil, J. Crunden, is Boodles Club House, but this design falls far short of that of his master. The influence of Henry Holland on Soane as a young man, before he gained the gold medal of the Royal Academy in 1776, is not widely known. The work of Sir John Soane passes through three stages: his early designs made at Rome for the Bishop of Derry are Palladian; the second stage of his work attempts to emulate the planning and decoration of suites of rooms in the manner of the brothers Adam; the third stage, probably inspired by the advice of Sir William Chambers given to Soane when a pupil, "to study the 'out-pourings of Piranesi,'" shows great ingenuity of detail

and an attempt to develop a novel system of vaulted ceilings. The segmental and umbrella ceilings, domed lanterns, panels formed of annulets and the use of Greek meanders form the chief elements of all Soane's interior designs. His own house in Lincoln's Inn Fields conveys in the most adequate manner the character of the architect. While Soane's was undoubtedly the most original mind of his time, his artistry falls short of the ideal. The domestic interiors associated with his name include Marden Hill, Hertfordshire, Moggerhanger in Bedfordshire, and Tyringham in Buckinghamshire.

During the last quarter of the eighteenth century the decorative arts owed much to the classical researches of Stuart and Revett and the publications of the Society of Dilettanti. The interpretation of classical themes by Flaxman, the improvement of stucco decoration by Papworth, as well as paintings for panels by Cipriani and Angelica Kauffman of classical subjects, record the new outlook on Greek and Roman mythology. Another influence was the publication of Tatham's etchings of Roman ornament, due to Henry Holland, who sent the young artist to Rome especially for this purpose. In the designs for apartments by Sheraton can be seen the art of the assembler, who now assumed professional status. But the finest aspects of interior decoration and furniture design remained the prerogative of the creative mind of the architect. At all periods English art has owed much to French taste; therefore, it is not surprising that the Treaty of Amiens, in 1802, brought renewed influences. The works on architecture, decoration, carpentry and ironwork, published by Percier and Fontaine, Krafft and Ransonnette and other designers, were studied by Soane, Nash, Porden, Spiller and Laing. The subsequent classical manner for interiors developed by Nash and his contemporaries exhibits many features inspired from French contemporary decoration. Thus a good deal of the interest of Regency decoration is of French origin. The last phase of the Regency style was expressed by Basevi in the interior decoration of the houses in Belgrave Square. During the early Victorian period the art of decoration varied between debased versions of the Regency, attempts at pure Greek by the Inwoods, severe Greek as at University College, London, and Downing College, Cambridge, both by William Wilkins, and elegant versions of blended classic contributed by Professor C. R. Cockerell. The Italian phase of decoration practised by Sir Robert Smirke, Sir Charles Barry and Alfred Stevens forms a subsection

of the Victorian classic movement. On the Gothic side the illustrations given by Loudon show the banal character of the vernacular style, which included versions of Elizabethan. Fireplaces were generally of French character, often imitation Louis Quinze, and were bought from stock, either in Belgium or England. After the Exhibition of 1862 a group of architects and artists, appalled by the decline of taste, attempted to revive the handicrafts. Finally, William Morris, Norman Shaw, Eden Nesfield, George Devy and Philip Webb introduced a simple domestic style for interiors and furnishings to suit middle-class needs. This in turn led to the neo-Georgian revival in which panelling, fireplaces, mahogany doors and plaster ceilings were once more in favour. Parallel with this literary movement a taste for period furnishing was developed and the whole range of historical designs from Tudor to Early Victorian was laid under contribution for ideas.

The foregoing shows that during four centuries interior decoration received its main impetus not only from the theme of the traditions it created as it advanced, but also from the fact that its exponents were continually referring to prototypes of ornament pertaining to remote antiquity. This process was common to European culture from mediæval to modern times. Art has always been responsive to eclectic thought and varies in expression in direct ratio to the temperament of schools of design. The chief lesson to be gained from a study of decorative art generally, in England and elsewhere, is the close affinity that exists between external and internal treatments; another aspect being the continual transference of structural forms to the secondary purposes of decoration.

Chapter 14

RENAISSANCE DECORATION IN NORTHERN EUROPE

THE NETHERLANDS, GERMANY, AUSTRIA, DENMARK,
SWEDEN, RUSSIA

A SURVEY OF THE history of the Renaissance in Northern Europe will prove that in every country where the adoption of classical art has been general, grafting of acquired details on to existing forms has been the first step. Distance from the source of inspiration, as well as means of contact, has always been a determinant in any change of style. It has been shown that France first received the thawing influence of Italian art, the Netherlands were naturally the next; then followed the Germanic States, and lastly the Scandinavian countries.

There are few spectacles of history more exciting than the struggles of the Netherlands for independence. The fights of Holland against the Royal House of Austria, the campaigns against Spain, and finally the emancipation of the Low Countries, led to the founding of university centres and prepared the way for the rise of Dutch art. In the order of investigation preference is given to Belgium for the reason that this country, next to France, was in an advantageous position to receive and to transmit various influences to all parts of Europe. The buildings of the sixteenth century in Belgium contain apartments the design of which record the transition from the art of the Middle Ages to that derived from Italy. In Antwerp the famous house of Plantin, now the Musée Plantin, can be cited. In Malines the interiors of the Palais de Justice, completed in 1517, should be compared with the interior of contemporary French buildings.

The Musée Plantin-Moretus contains many interesting rooms recalling

the Spanish influence, particularly the walls which are finished in stamped Cordova leather. The apartment of Juste Lipse shows a timber ceiling in which the joists and beams are exposed. The large windows on one side of the double transome are mullion type glazed with lead canes, arranged in alternate square and rectangular lozenge patterns. The walls from the skirting to the underside of the ceiling are finished with squares of Cordova leather. The floor is formed of oak battens.

From the reconstructed apartments of the Château d'Anderlecht, dating from the late sixteenth century, can be gathered the style of many interiors of contemporary date. The chief feature is the monumental fireplace supported on fantastic columns and carved corbels. The design of the lintel is based on a classical entablature and the space over is framed with a pilaster order of dwarf dimensions. While the principle of the ceiling construction remains the same as in mediæval times, the master beams are moulded and panelled as a concession to the new style. The master beams are supported at the ends by carved corbels.

The feature of large apartments in some of the early examples was the internal porch, as in the Hôtel de Ville, Oudenarde, the most famous example of Flemish wood-carving of the time. At Mons the decoration of the green room in the Hôtel-de-Ville, which dates from the seventeenth century, is more pronounced in its Italian leanings. The spaces between the ceiling beams are richly decorated. The wall panelling is carried to a height of about six feet, the feature of the design being a series of arcuations framed by pilasters. The stone wall surface above the panel is left exposed. In the design of the dining-room of a house in the Poultry Market at Ghent, dating from the second half of the seventeenth century, the full result of the influence of Peter Paul Rubens is seen. While the ceiling treatment continues the earlier tradition of beams and joists, the walls are panelled with a space over for oil-paintings on canvas, the latter by Gilles le Plat. The great fireplace by Jean Van Cleef still retains the lines of the mediæval prototypes, but in this case the lintel and the side supports are classical. The intricacy of the panels to the doors, the carved figures on either side of the upper panel to the fireplace representing Albert and Isabella, the cartouche containing a portrait of Charles V with supporting cherubs, reveal the style of decoration made popular by the facile pencil of Rubens.

Antwerp, Malines, Ghent and Bruges contain houses in which the decoration of the apartments follows the French styles of the eighteenth

century. For example, the staircase of the Ophthalmic Institute at Ghent has a staircase hall decorated in the manner of the French Rocaille. How absurdities of design arise from fashion can be seen in the breaks of the staircase handrail.

In the same way the more sober effects of the Baroque fashion of Louis Quinze character occur in the treatment of the wall panelling of the Abbaye at Grimberchen. To this can be added the apartments in the Royal Palace at Brussels, which correspond to the style of Louis XVI. During the nineteenth century Belgian decoration interpreted various revivals of historical styles. Finally, with the building of the Palais de Justice at Brussels, the design of the halls and official apartments partook of a Neo-Greek character. Since that time Belgian art has again passed through phases of sub-revivals as well as the phase of *L'Art Nouveau* from Austria; modern Belgian art and decoration now follow the prevalent fashion of France.

Since the emancipation of Holland in the late sixteenth century Dutch art and decoration have developed on lines both national and complementary to contemporary European art. In every branch the artists proved themselves to be great and original. For more than two centuries the spirit of Dutch art was maintained and a series of remarkable examples contributed to enrich the homes of the wealthy, no less than the official buildings. The fireplace was recognized as the focal point in all schemes of interior design. Those of the seventeenth century were large and framed with columns, as in the Council Chambers of Haarlem 1630. A low dado heavily moulded formed the base of the wall treatment, hung with richly worked tapestry, the ceiling treatment consisting of heavy master beams strengthened at their extremities with bridging joists between. The walls, where tapestry was not intended, were left cream white; not the least of the minor attributes was the hanging brass chandelier. From the paintings of Jan Steen, Vermeer, Pieter de Hooch, and Teniers the younger, can be gained an exact idea of typical interiors.

During the seventeenth and eighteenth centuries Dutch versions of French decoration carry the later Renaissance traditions on to the period of the Empire. Such interiors as the stair hall at Desteeg, Louis XIV, the wall and ceiling treatment of the Council Room at Goes, Louis XV, the staircase of the Town Hall at Weesp, Louis XVI, or the chief apartment of the foundation of St. Anthony at Bolsward of the same

period, prepare the way for the severe classicalities of the Council Room of the Cabinet at The Hague, in the style of the Empire.

The national style of interior design in its truest expression is to be seen in the reconstituted room of the seventeenth century in the Museum at Leyden. It may also be said that as Dutch art progressed the style became more universally European. Modern Dutch interior decoration has closely followed this principle and to-day is pan-European in its scope, while for exteriors Dutch brickwork ancient and modern has influenced similar work in other countries to-day. Continental art has reacted on the modern Dutch school with similar effect.

Renaissance decoration in Germany passes through four phases, namely, the transition from Gothic, the distinct early Renaissance phase, the Baroque, and finally the return to more academic classicality. Proceeding to a discussion of early Renaissance art, the Dining-hall of the Kloster St. Georgen at Stein on the Rhine, 1516, shows the influence of Italy, the main theme being paintings in perspective, slightly recessed and framed by arcuations. The dado is panelled in small squares, and the ceiling is vaulted longitudinally between the beams. The inspiration in this case is plainly derived from the Certosa at Pavia. A fine example of interior decoration dating from 1548 is a panelled apartment from Schloss Haldenstein bei Chur. In this example an advance has been made towards the incorporation of a classical order and entablature with the panelling. The attic treatment above the order allows for the introduction of street scenes in perspective. The coffered and moulded ceiling of rectangles and diamonds introduces a distinct innovation for a framed ceiling.

At the close of the sixteenth century painted wall decorations with ornaments in low relief and patterned ceilings of slightly moulded form represent closer association with the designs of Genoese architects. An example of this may be found in the elegant room of a house at Burg Trausnitz.

By the middle of the sixteenth century the publication at Stuttgart of Wendel Dietterlin's book on architecture had a great influence on contemporary designs, and was responsible for a heavy type of decoration. Previous to this the drawings of Albrecht Dürer, with their slight references to classical forms, had provided motives ideas for architects and craftsmen.

French influence, however, was soon to be welcomed, as can be seen

in the internal treatment of the library of the Schloss at Namiest, completed between the years 1660-70.

At the beginning of the seventeenth century archaicism was suppressed and grandiose effects sought. At Schloss Weckersheim, Württemberg, the great hall built in 1603-5 is characteristic of the new development. Openings with segmental heads and roundels over occur on both sides of the hall. The ceiling is framed in beehive formation, and the individual panels are painted. The focal point is the principal doorway with the gallery over. Here is evidenced the skill of an artist designer, and one conversant with the principles of decorative composition. In this case the success of the composition results from the great sweep of the semicircular vault with interpenetrations at the sides, and the comparatively low treatment of the presses for the books. The subordinate interest of painted decoration on the surface of the vault, combined with scrolls of cartouche form, recalls once more the influence of Rubens and Genoa.

A similar instance of vaulting, combined with wall panels and niches, exists in the entrance hall of the castle at Kremsier, designed in 1698. In this example the vaulted niches reach upwards and outwards to support a central ellipsoidal flat panel. The predilection for vaulted ceilings for great apartments lasted well into the eighteenth century. In the castle of Fulda, designed between the years 1727-29, by Von Friedrich Joachim Stengel, this type is seen at its best. The style now assumed a definite Baroque cast comparable to the matured work of the Italian school of the same period. Taste in decoration veered in favour of French art, and it is not surprising to find versions of the Louis Quinze style, as in the apartments of the castle of Tenneberg, built in 1745.

At Potsdam, the Versailles of Germany, stands the Schloss Sans Souci, designed by Dietrichs or G. Knobelsdorf in the middle of the eighteenth century. This one-storey palace, designed after the contemporary French manner, contains interiors which emulate the decoration of the salons of Paris. Frederick the Great's admiration for French culture was responsible for the imitation of French compositions, but this alone, unaided by the Teutonic preference for the Baroque, would not have resulted in works of distinction.

In the new palace at Potsdam the Music Room composed after the manner of Boffrand is a version of French curvilinear Rococo.

Towards the end of the eighteenth century, as evidenced in the treat-

ment of the Audience Chamber in the Royal Palace at Berlin, 1780, versions of the style of Louis Seize became current. Finally, the French Empire style was adopted, and its principles were extended by Karl Friedrich Schinckel and his contemporaries. In the Royal residence at Munich, designed by Leo Von Klenze between the years 1832-42, the full effect of archæological research on interior design is shown.

At Munich, the centre of nineteenth-century art culture, it is not surprising to find many examples both of eighteenth and nineteenth-century art. French taste was established in this city when the famous Cuvilliès was commissioned to design the interiors of the palace, some of the designs being executed by Miroffsky. The Residency Theatre, also by Cuvilliès in 1760, is one of the finest examples of the Rococo. It is interesting to read that at this period Bibiena was engaged upon the decoration of the theatre at Bayreuth. Outside Munich the Nymphenburg, Cuvilliès' masterpiece, contains some remarkable examples of interior decoration.

For church interiors of the Baroque period of the eighteenth century, one of the greatest German architects of the time, Johann Michael Fischer, gained renown for the sumptuous and original embellishment of his churches. The interiors of the Benedictine Abbey of Ottobeuren are among the most important of their type in southern Germany.

The interior of the church itself, in so far as the structural lines are concerned, follows Italian precedent. The Corinthian ordonnance is confined to the great piers. The ceiling is vaulted and the clerestory windows of lunette form are sympathetic to the lines of the vault compartments. The vehement treatment of the wings to the great reredos framing the high altar, the rich carving and embellishments of the organ, no less than the sumptuous character of the fitments and furniture, combine to impress the eye.

The influence of matured Italian art in the Germanic countries can be traced to the famous Fischer von Erlach, who between the years 1680-85 spent five years studying architecture in Italy. Whoever has enquired into the arts of design of the seventeenth and eighteenth centuries has been impressed with the number of Italians who were employed in Austria. The progress of intercourse between natives of both these countries was bound to be rapid, owing to the proximity of the latter and the ease of communication by land and sea. For example, Martinelle

was employed to prepare designs for the Church of St. Peter, Vienna, in the seventeenth century. Burnacini Pozzo, however, created the Viennese style and wielded an enormous influence on contemporary art in all countries. In England Pozzo's rules of perspective were consulted not only by architects but by painters, including Sir James Thornhill, then engaged at St. Paul's Cathedral and Greenwich.

The connection between Baroque decoration in Italy and in Austria and Germany is that of one activity corrected and amplified by another. In the work of Fischer von Erlach full expression is given to voluptuous freedom of design. He was mainly responsible for the Schonborn Palace at Vienna. It is conjectured that von Erlach prepared the first design for the Schöubrunn Palace afterwards carried out by the Court architect, Pacassi.

The Mielion Room has walls panelled in the French manner with Chinese Feketin rosewood. This room exhibits a riotous patterning of arabesques. The Rococo panels frame rare Persian miniatures. The long mirror gallery in the same palace, with the frescoed ceiling by Gugliemi, recalls the Palace des Glaces at Versailles. The character of the interiors at Schöubrunn is pure and distinctive. Austrian Baroque combined with Austrian Rococo. Although Italians were employed, the French spirit from Versailles is only partly disguised by Teutonic industry. The delicate fantasy of these designs, with their white and gold colour schemes, fine parquet floors, and painted ceilings, was meant to be seen by the glimmering light of many candles.

Teutonic art, in so far as the decoration of apartments is concerned, began with the painting of shields-of-arms on the walls. This display of armorial bearings arose from pride of ancestry and ostentation. Contact with France and Italy in the sixteenth and seventeenth centuries led to the adoption of the contemporary styles of those countries. Finally, in the nineteenth century both Germany and Austria engaged in the fields of exact archæological research. The works of Schinkel, of Leo von Klenze and of Hansen evidenced this predilection for adapting ancient themes. In the work of Otto Wagner can be seen the break with tradition without disregard of time-honoured principles.

Those intimately acquainted with the art history of Denmark, Sweden and Russia appreciate the extent to which Renaissance art affected design in these countries from the seventeenth century onwards.

While Denmark and Sweden accepted modes of design from Holland

and Germany and finally from France and England, Russia imported foreign artists.

Swedish decoration ranges from the seventeenth-century apartments of the Riddarhuset to the interiors of the Royal Palace at Stockholm, by Tessin. Tessin's own house, now the house of the Governor-General, is a fine specimen of Baroque design, in which the treatment of the apartments recalls the style of Louis XIV. In the eighteenth century the influence of Sir William Chambers is to be seen in the miniature pavilion at Drottningholm, famous for its Chinese decorations. During the reign of Gustavus III, Swedish decoration followed the style of Louis XVI. Under Bernadotte the style of the Empire prevailed. With the completion of the National Museum at Stockholm, the whole range of historical Swedish art from the sixteenth to the nineteenth century was revealed in the exhibits. At Skansen the interiors of small country houses, farms and cottages show the primitive simplicity of the traditional style arising out of everyday necessity.

The work of such distinguished architects as Ivar Tengbom and Professor Ragnar Ostberg show that a fresh note can be struck in interior decoration based on scholarship.

The story of modern Russian decoration begins with the building of the royal palaces after the time of Peter the Great, and the employment of foreign artists and architects. Such designers as Rastrelli, Quarenghi, Thomas de Thomon and Cameron carried the contemporary manner of their respective countries to St. Petersburg, Moscow and Kaluga. The true national spirit of Russian interior decoration, however, exists in the interpretation of the Byzantine spirit for the older churches. In the eighteenth and nineteenth centuries Russian designers were so ignorant of the real principles of composition as to be content to rely upon foreigners for examples of design and furniture. But these importations fused with local character are now recognized as Russian.

Chapter 15

THE EXOTIC STYLES

ISLAMIC DECORATION

ONE OF THE MOST interesting facts in the whole history of art concerns the cultivation of decorative composition by the Islamic peoples. Hitherto this has been the subject of isolated study and research, few attempting to connect the course of art progress in Mohamedan countries with similar events in other lands. Yet points of contact existed in the Mediterranean; Spain benefited by the Moorish occupation of the Peninsula, and Islamic art penetrated as far as India and China.

As early as the fourth century A.D. there was a flourishing school of craftsmen and decorators in Central Syria. These men were imbued with Greek traditions, but they sought for, and they accomplished, a new spirit in their work. In the seventh century it is known that Greek artists were invited to Damascus or Medina to decorate the mosques with mosaics. The local schools of artists, mainly Syrio-Christian, were employed by the Caliph Abd-al-Malik for similar works. Not only did Greek artists journey to Syria, but it is certain that all early Islamic monuments were designed and decorated by Christians. This tradition of enlisting the services of foreigners to build Mohamedan religious buildings continued until the late fourteenth century. Thus the early association, beginning with the names of the Emperor Justinian and the far-famed Chosroes, lasted for more than eight centuries.

Islamic art includes geometric decoration as the main theme of the compositions, but this is not entirely true of the earliest examples which rely upon floral or conventional patterns. Representation of human beings or animals were forbidden. Put briefly, early Islamic decoration

was the outcome of Greco-Roman combined with Sassanian and other Eastern influences. The interiors of the mosques at Jerusalem and Damascus fully illustrate this point.

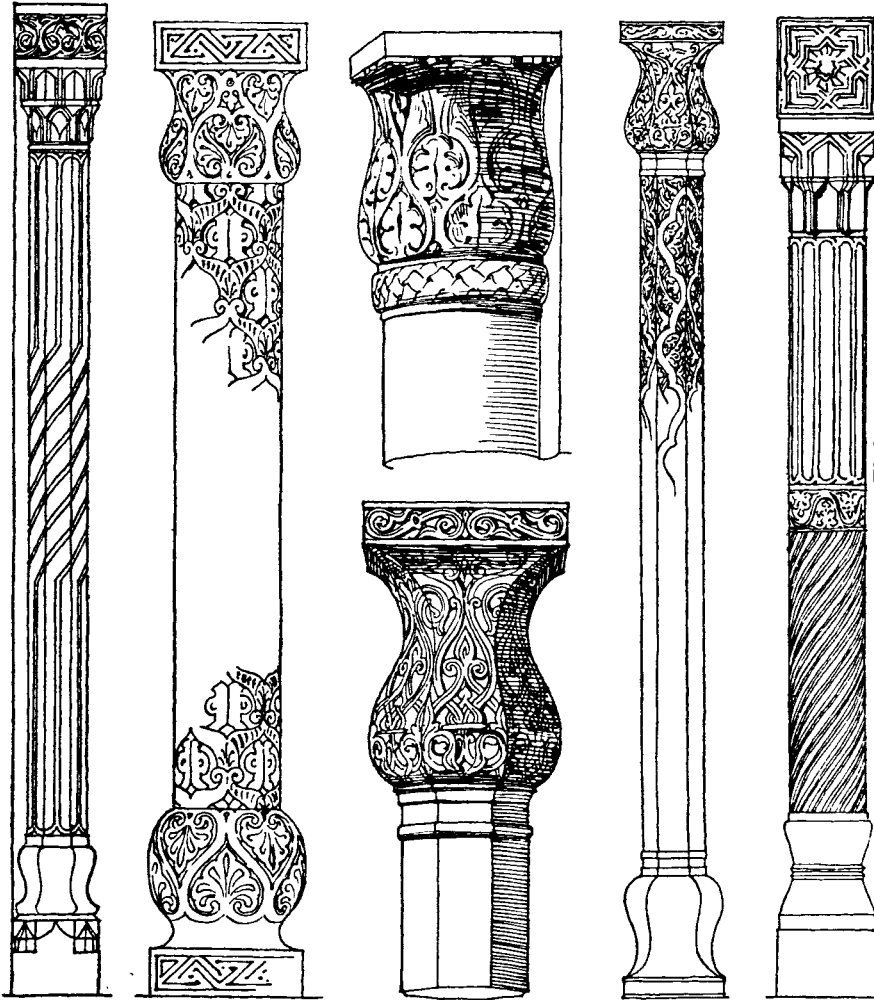
It is erroneously supposed that paintings were not lawful in Islamic art; there is no true foundation for this belief, but only a loose tradition concerning it. A proof of this exists in the paintings of the palace at Qusayr-Amra, which dates from the eighth century.

The Dome of the Rock at Jerusalem, built in the seventh century, shows details of decoration such as flowing scrolls and arabesques, as well as the vine leaf and anthemion ornaments. There are also spandrel formations with scrolls and vases. In a similar way the wall treatments of the great mosque at Damascus show geometrical patterns of quartered marble as the chief interest for large surfaces. In the same building, together with border patternings of circular type, there are mosaics representing pictorial scenes, in most cases introduced at salient points. Other features include the intricate patternings of the pierced marble grilles, paintings on vaults, consisting of trellis patterns with representations of men, animals or trees in each intersection, with zodiac designs set out on the surface of the domes.

The extension of Islamic art from Central Syria to other countries sympathetic to its influence must next be considered, the main impelling cause being the conquering human tide which left the desert of El Hamed at the beginning of the seventh century B.C., and which broke into two parts, the one passing into Mesopotamia and Persia and taking the direction of India, the other conquering Egypt, North Africa, Sicily and Southern Spain. Here is the reason for the branching of Islamic art East and West, and the resulting diversity of its character. Decoration inseparable from architecture, therefore, had four main centres, India, Persia, Egypt and Spain, and although, as in Syria, Islamic art began as an adaptation of local feeling, it culminated with a character of its own.

An analysis of the four main divisions must follow. For example, the artists of Islam profited by the large wall surfaces of ancient Egypt with their effects of light and shade; India inspired veneration for geometric patterns; Persia taught the lesson of the dome and the vault; while from the artists of Byzantium was gleaned the value of frescoes and colour. After the mosques of Mecca and Jerusalem, that of Amru at Cairo is one of the most ancient. The chief decorative interest of

THE EXOTIC STYLES



VARIOUS TYPES OF INTERIOR SUPPORTS AND COLUMNS

SEVENTEENTH CENTURY: ISLAMIC

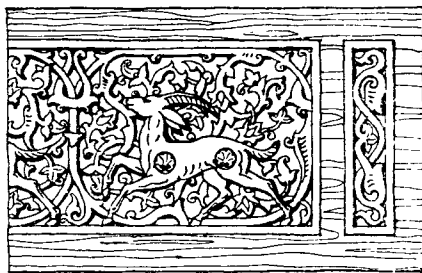
this building is found in the details of the bases and capitals to the columns, which features show Roman and Byzantine influence. But it was the form of the arch that inspired the decorative treatment of impost bands, of patterned spandrels and of the radiating flutings of tympana. The following are quoted as outstanding examples of this form of design: the fillings in the arches, as in the mosque of El-Salem Telayeh, or the

banding and spandrel treatments of the arches of the mosque of Rokajah at Cairo. Islamic art in Egypt, however, found its chief expression in wall decoration, fabrics, carpets, ceramics, mosaics, woodwork, coloured glass and metalwork.

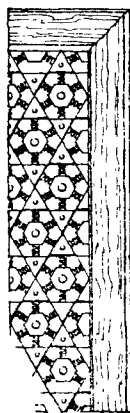
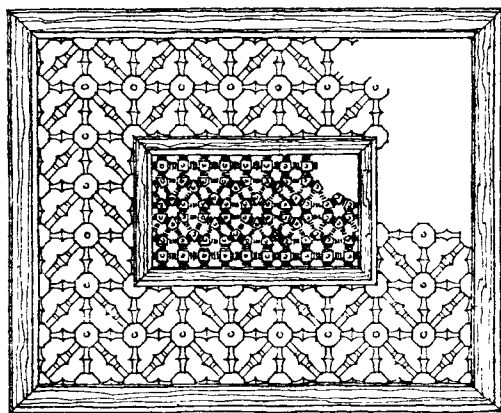
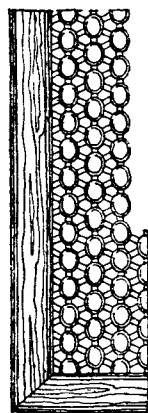
Turning to some of the important monuments, such as the mosque Ibn Tulun of the ninth century A.D., the plastered decoration applied over the brick structure consists of geometrical patterns combined with floral ornaments. But it is the contrast of plain surfaces with enrichments that gives quality to this magnificent exterior. The twelfth-century mosque of Telayeh-Abu-Rezyk contains this form of decoration in a more rigid form, the similarity between external and internal treatments arising from the material used, namely, plaster to cover brickwork. Interiors in general, however, derived their main importance from the truthful observance of structure. In the fourteenth century decoration became more mature, extraneous influences are, therefore, less apparent. The tomb of Sultan Kalaun is a fine example where arabesques mingle gracefully with the wooden screens of intricate patterns. Very early in the development of Islamic art it was found essential to combine efficiency of structure with beauty of form, and thereby a great principle of design became universal.

The atmospheric quality which is never absent from Islamic interior designs can be attributed to the transparent effect of pierced screens in wood and marble, contrasted with bold structural statement. This reverence for intricate patterning, and of contrasting design, is carried to the furniture and to the brass lanterns, as in the tomb of the Sultan Barquq. Arches of horseshoe form, spandrels with arabesque infilling, niches and triangular bends and beehive ruffling, as well as richly decorated bandings (where calligraphic inscriptions are introduced), are all attributes of this established system of decoration. Similar inscriptions are often introduced in mosaics.

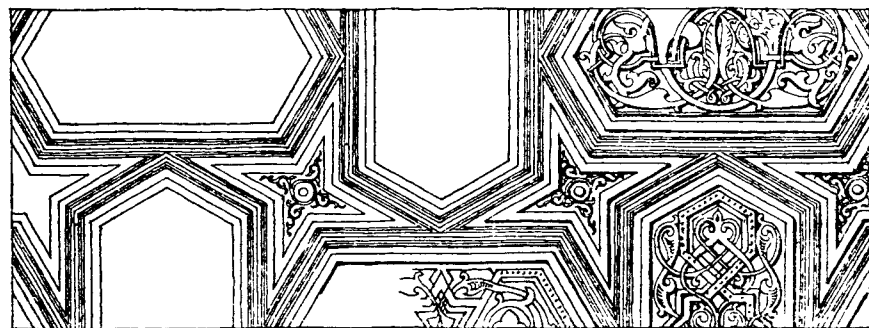
The Islamic designers in their work excelled in the use of carved and coloured woodwork. Most of the ceiling patterns consist of polygonal designs, mainly dodecagons, by reason of the fact that more varied combinations are gained. Such is the case of the ceiling designs in the mosque of El-Bordeny at Cairo. The enrichment of wooden beams and the interstices of ceilings with coloured decorative patterns also forms part of an elaborate system. Similar ingenuity is displayed in the framing of doors into small panels or compartments, raised mouldings



ISLAMIC CARVED WOOD
DECORATION, THIRTEENTH
CENTURY



MUSHARABYEH PATTERNS



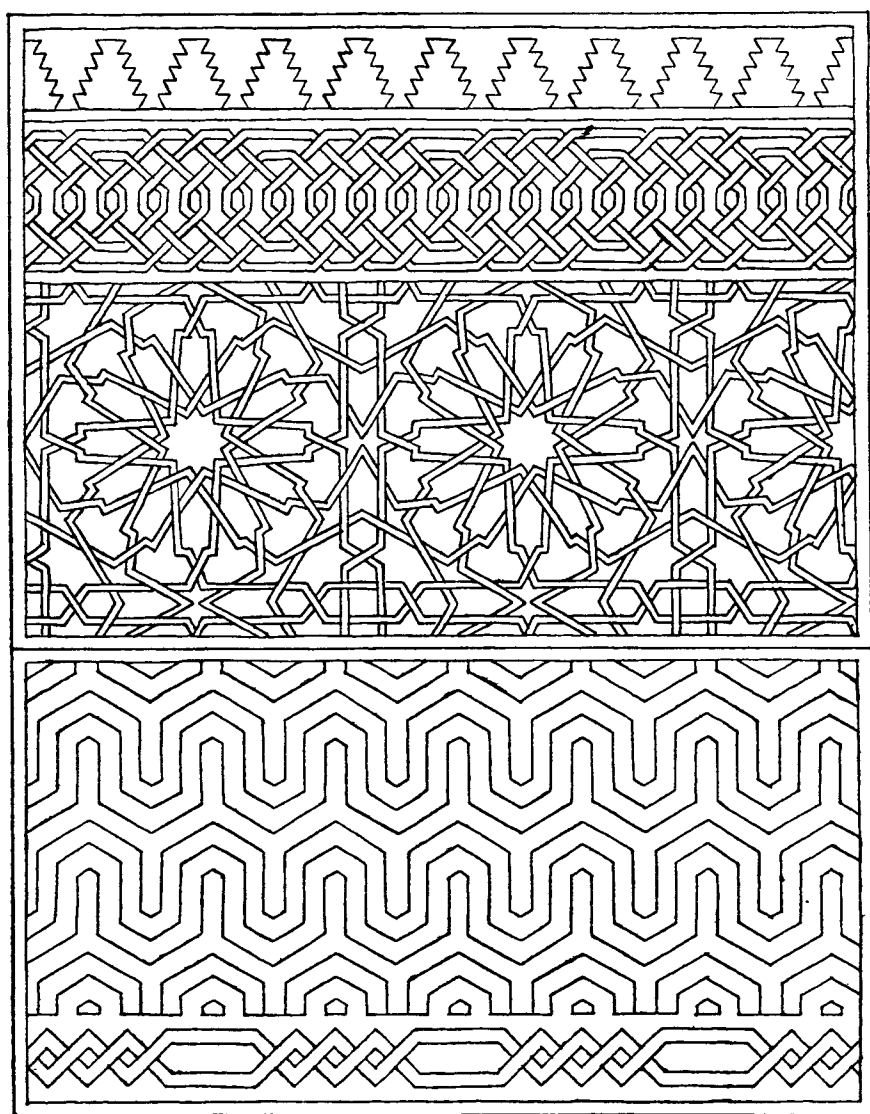
ISLAMIC DECORATION, ARABIC
CARVED WOOD PANEL,
TWELFTH CENTURY A.D.

and fields, together with richly designed wrought-metal hinges, locks and handles, all such details being characteristic of the work of the sixteenth century.

A description of the interiors of the best of the private houses of Cairo, dating from the sixteenth and seventeenth centuries, is now opportune. The principal ground-floor apartment, the reception-hall, consists of a rectangular room with recesses at the side. In the centre is a basin with a fountain. The walls are usually finished with marble panels and mosaics, the floor is tiled, the ceiling is constructed of wood. The example at Mandarah is perhaps the most representative. The Arabian designers made use of fretted plaster inlaid with coloured glass, which treatment admitted subdued light to interiors. These panels, known as "chemsah," date from the fourteenth and fifteenth centuries. In brief, the main activities of this special branch of Islamic decoration consists of geometrical patterns in colour, calligraphic inscriptions, mosaics and pierced fretwork applied to wood, metal, marble and stucco.

In its sweep towards the West, Islamic civilization created two centres, namely, Kairouan in Tunis, and Cordova in Spain. The art that resulted was subject to local influences which demand explanation. While in North Africa Berber unrest did not admit at first of a crystallization of art to any great extent, in Spain a fuller development ensued. Eventually the conquest of Spain by the Sultan Abu-Tashefin, in the eleventh century, brought political stability to the Mohamedan provinces in the Iberian Peninsula. The pursuit of art was now coincident with the rising prosperity of the Moors in Spain. The existence of Roman buildings, as well as of a substantial building tradition, provided the resistance so essential to the development of Islamic art which at no period was strong enough to be self-creative. Then followed the transmission of the developing style back to Morocco.

While the planning of the mosques in Spain and Morocco in the earlier stages followed that of Amru in Cairo, thereby determining the treatment of countless arcades, niches and recesses, it was the use of faience and ceramics which formed the main decorative attribute, the latter treatment being directly inspired from Baghdad. The artists of Spain and Morocco borrowed extensively from each other, thus setting up an interaction of artistic ideas and a resulting interplay of form and detail, the link in all cases being the common inspiration of the Roman tradition, combined with motifs obtained from places as far

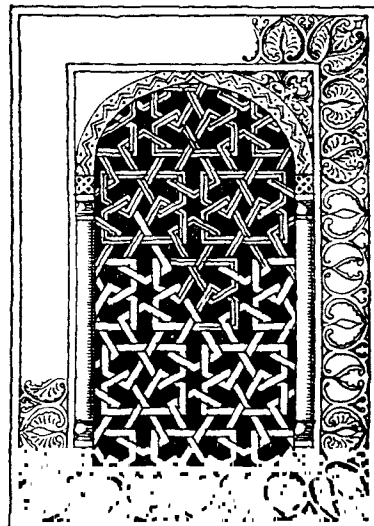
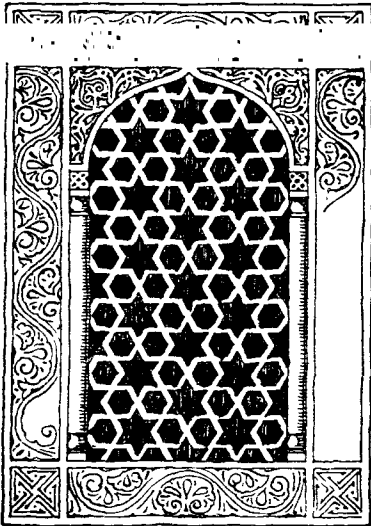
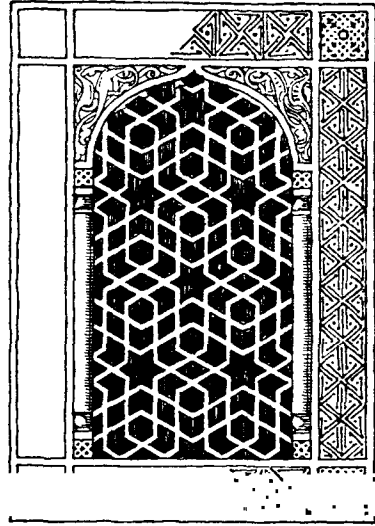
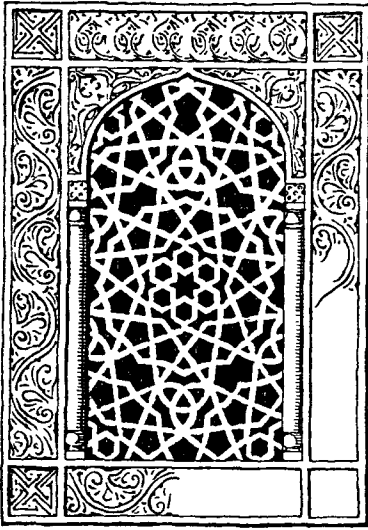


ISLAMIC DECORATION

VARIOUS COMBINATIONS OF GEOMETRICAL PATTERNS, FOURTEENTH CENTURY A.D.

apart as Persia and Byzantium, as well as the Visigothic art of Spain itself. By the fortuitous chance of circumstance Cordova became the most flourishing city of Europe at a time when the Continent of Europe was emerging from the chaos of the Dark Ages. The character of the Moorish decorations dates from the reign of Yacub-el-Mansur in the twelfth century; this ruler commanded his architects to discard such fragile material as plaster, pisé and wood, and to build in stone after the manner of the Syrian architects. A new technique arose in which curved stalactites for domes and niches, flat arabesques and Kufic inscriptions for wall surfaces, also pierced screens, became prominent features. The new tradition comprised richly carved cornices in stone, decorated ceilings and marble floors. With the decline of the Moorish Empire in Spain after the fall of Sas Navas de Tolosa in 1212, the Mohamedans withdrew to Granada, while in Africa the Almohades were supplanted by the Beni-Merin, who created a new centre at Fez.

As a result, the Mohamedans concentrated within the province of Andalusia and sought to find in this world the delights promised to them by their Prophet in the next. Artists and craftsmen discarded the strong lines of the style of the Almohades in favour of the light and gracious constructions of plaster, of lattice and of brickwork. Brick walls were now faced with polychromatic plaster and faience. The lightness of timber-constructed vaults admitted the introduction of numerous pendentives, beehive patterns and stalactites. The Andalusian style which now developed found its most glorious expression in the interiors of the Alhambra at Granada. This masterpiece of the Islamic style owes its power not to the faultless character of the detail, but to the forcefulness and delicacy of the ensemble. Scientific construction is seen allied to observance of form in all its seemly integrity. To obtain this result the Moorish artists had three materials at their disposal, namely, stone, ceramics and timber. But it is the subtle sense of colour that pervades every part that ensures perfect repose to the ensemble. Allied to this there is perspective and regard for atmosphere, as well as proportion and scale. The preparation of the stucco for the internal treatment demanded skill and careful preparation. The stucco was of a type to harden slowly, and this result was obtained by mixing with the lime ground eggshells, glue or salt. The arabesque patternings were formed on the surface with a pointed instrument and afterwards incised with the chisel. At a later period moulded plaster was substituted for this earlier method.



ISLAMIC DECORATION
WINDOW TREATMENTS IN PLASTER AND ALABASTER
FOURTEENTH-CENTURY ARABIC PATTERNS

With regard to faience a number of processes were employed. Faience was the favourite material for dadoes and floors, and its use for the latter was due to the habit of the Moors of walking barefooted within their buildings. In all designs for faience the Persian influence is the dominant one. Woodwork was used for the ceilings of apartments and porticoes or for polygonal vaults as in the Court of the Lions. The Alhambra, therefore, is typical of the style which lasted from the twelfth to the fifteenth century.

Where the Moorish style most excels is in the adaptation of foreign features of decoration. The Museum at Saragossa contains some remarkable specimens of carved capitals of the tenth century, all of which show conventional treatments derived from the Roman Corinthian capital.

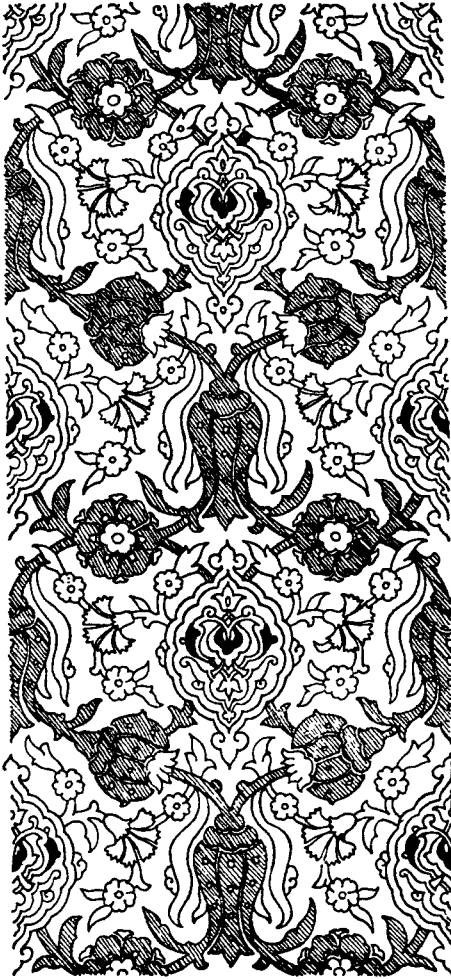
As to North Africa itself, the splendid mausoleum to the dynasty of the Saads at Marrakesh, built in the sixteenth century, provides a counterpart to the treatments in vogue at Granada, Seville and Cordova. The internal treatment, which is of great richness, relies upon a profusion of intricate patterns contrasted with columns of slender plain shafts and arches framed within rectangular borders. The richly carved wooden ceilings, no less than the semi-pierced stucco above the dado, conveys an impression of painstaking industry. Such results could only have been gained where cheap labour abounded and where the desire to be meticulously geometrical at every point was an obsession.

At Fez the Madrasah Attarine or the Madrasah Buanania present two complete examples of the Moorish style. A subdued colour scheme of greenish blue, blue, purplish blue and dull ochres suffuses the treatment of windows and floors into a delicate harmony. The whole theme of Moorish art resembles the fantastic dreams of a thousand and one nights in which the participants are rival sultans each seeking to live more luxuriously than his immediate predecessor.

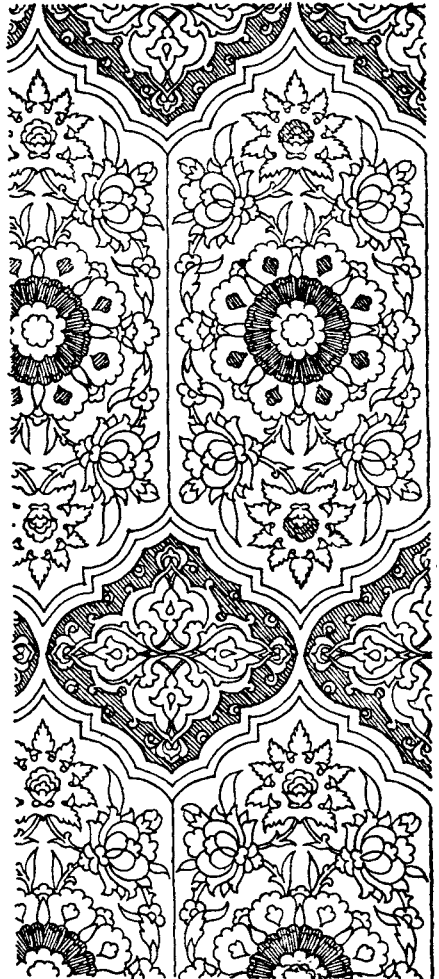
It is now appropriate to examine how far Islamic art entered into the propriety of Persian art. On the supposition that art movements always advance, and never recede or remain stationary, it is reasonable to suppose that but for this timely intervention Persian art would have continued the earlier traditions derived from Assyria and Greece. These earlier traditions were, however, to be considerably augmented by the Mohamedan invaders, who conquered Persia in the seventh century A.D. The conquerors forced their faith on the Persians, giving them the choice

of death or the Prophet. As a result, the Zoroastrian creed was almost stamped out and Persia became part of the dominions of the Caliphs, being governed first from Medina and then from Baghdad. The coinage became Moslem, and Arabic was used as the official language of the country. In 1272 Genghiz Khan led the Mongols to Persia and bathed the country in blood. Several Mongol rulers succeeded until their dynasty was destroyed by Timur the Lame (Tamerlane) in 1395. Finally, in the sixteenth century, Shah Abbas initiated what was to be the Golden Age in Persian history. Every fine building and every bridge of the late sixteenth and early seventeenth centuries has been attributed to the wise rule of this great Shah. Early in the eighteenth century an Afghan dynasty ruled Iran, thus affirming the long-established contact between the country and India. In spite of these varying dynasties, Persian art has continued to retain its Islamic character and to continue its natural expression. This is perhaps best seen in the interior decoration, which presents two types of design, namely, those with trabeated forms such as flat ceilings, lintels, beams and columns and those of arcuated and vaulted type. The latter are usually based on circular or octagonal plans and seem to be of Armenian or Sassanian origin. Searching for a reason for the development of the stalactite patterns, it is found in the universal system of brick building which encouraged corbelling and at the same time promoted panelled and indented surfaces for the walls. The facility of handling which accompanied the use of brickwork as a structural material indubitably encouraged the more special features of design, which in turn were transferred to interiors.

The patternings were so effective that they were imitated in terra-cotta, as in the blue mosque at Tabriz and the mosque at Ardabul. Frequently, as in the Tomb of Zobeide at Baghdad, the whole vault is formed in stalactites. The adoption of the stalactite pendant for all prominent features, such as cornices, brackets and other features, led to the ornamentation of these features with glass and wall-mirrored facets. Among other treatments, that of faience employing encrustation after the manner of the Roman *Opus sectilæ* was favoured. The colours for nearly all interior decoration are either turquoise blue or ivory white. The imitation of carpets and of woven stuffs in ceramics, giving the effect of embroidery on the walls of apartments, is yet another characteristic. In the seventeenth century coloured tiles took the place of enamelled



SEVENTEENTH CENTURY A.D.



SIXTEENTH CENTURY A.D.

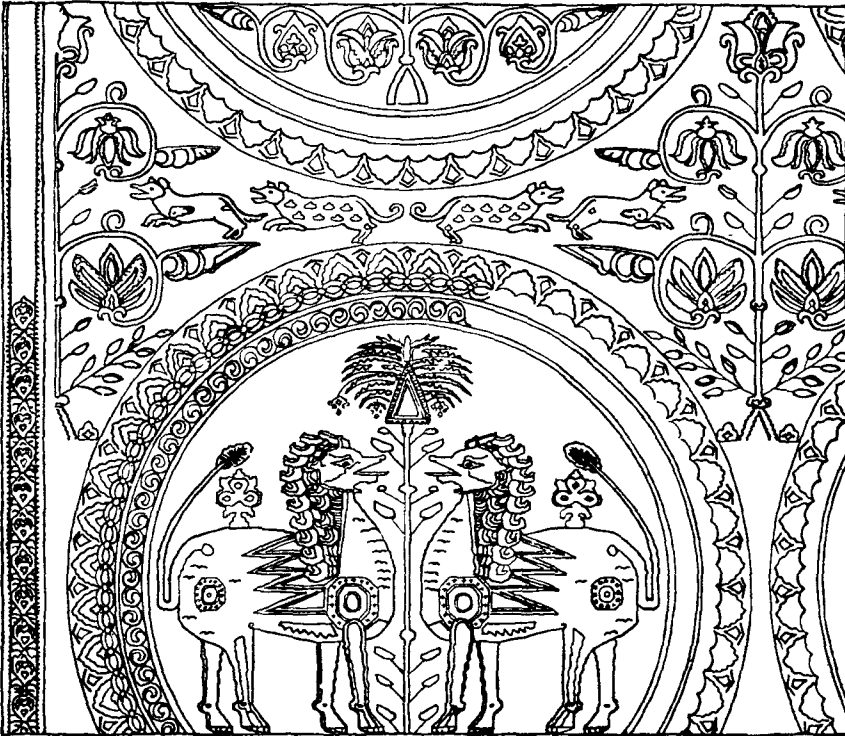
ISLAMIC DECORATION

ARABIC TILE DESIGN

bricks, the gamut of colour becoming richer, the prevalent tones inspired from China being yellow, red and leaf green. The decoration of this period, however, continued to imitate the design of carpets with the addition of figures of human beings and animals. Window openings are large with the voids being filled with fret-cut plaster inlaid with

THE EXOTIC STYLES

coloured glass. Prior to the seventeenth century only the mosques were thought worthy of elaborate schemes of decoration, but from now onwards the system of embellishment already described was carried to the decoration of palaces and mansions. The chief feature of the late Iranian architecture is the pointed and curved arch derived from the



ISLAMIC DECORATION

REPETITION DESIGN IN WHICH A LARGE CIRCULAR FEATURE CONTAINS A CONVENTIONAL TREATMENT OF ANIMAL FORMS

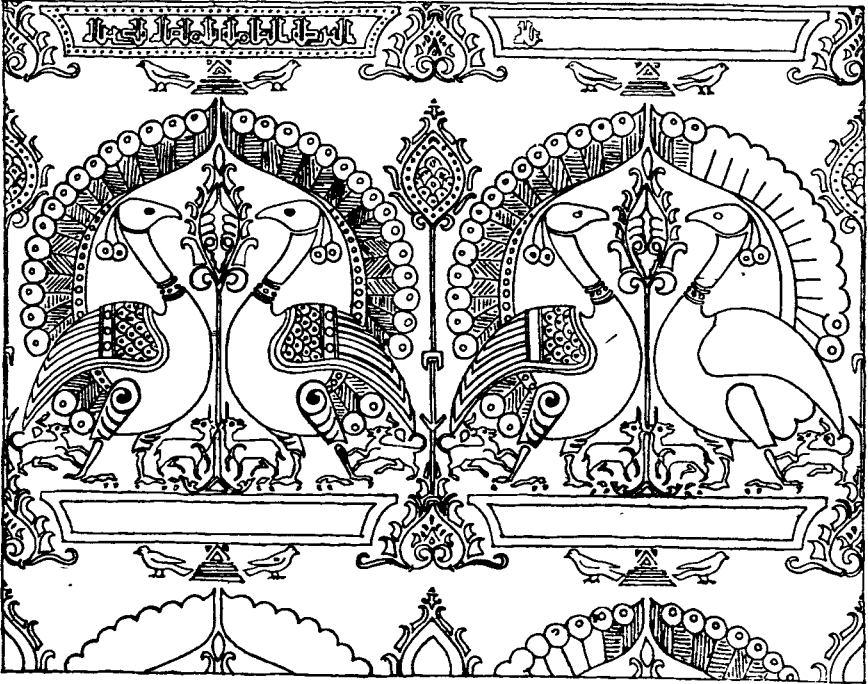
TWELFTH CENTURY A.D.

Buddhist pointed niche reflecting the leaf of the pipal tree under which the figure of Buddha is usually seated. This form of arch appears in India at Gāndhāra as early as the eighth century, and there is no doubt that it resulted from the Buddhist-Sassanian mingling of form which took place in Seistan, Turkestan and Afghanistan. The three-cusped

THE ART OF ARCHITECTURE

arch peculiar to Kashmir is also found in Persia, and this reveals the close contact between both places.

Outstanding examples of Persian art may be seen in the mosque at Ispahan, the tomb of the daughter of Hulaqu at Maragha dating from the thirteenth century, the mosque of Djuma at Veramin, and the monuments of Samarkand.



ISLAMIC DECORATION

GEOMETRICAL GROUPING OF FREE SUBJECTS. THE PEACOCK IS USED AS THE PRINCIPAL MOTIF

To sum up, whatever the prejudices of the Western mind may suggest as to the superior merits of European art, it will be conceded by all unbiased critics that the Islamic contribution in Persia was productive of another facet of comprehensive design in decoration. During the renaissance of Iranian art in the seventeenth century, under the ægis of Shah Abbas, Ispahan became the finest city in Persia. Mosques, palaces, mansions and gardens were embellished in a restrained manner; public

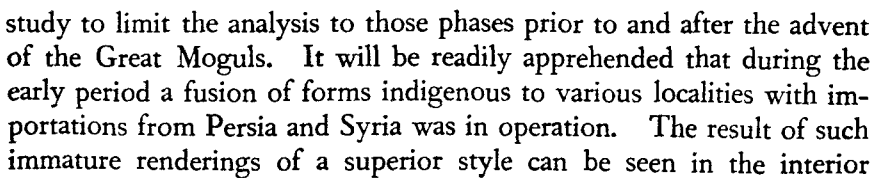
THE EXOTIC STYLES

works were inaugurated and the crafts were encouraged as never before. The treatment of the ceiling of the palace of Aine-Khan with its novel cornices and delicately patterned ceilings formed of intarsias of cedar and planewood was typical of an architectural system related to the very fibres of the Islamic tradition. The cycle of artistic development was completed by the building of the palace of Tchehel-Sutun, erected for the Shah Abbas I and rebuilt subsequently after a fire which destroyed the original building. In the main room the ceiling is finished with mosaics, the process being to set the mosaics in position on the ground as a preliminary to their transference to the ceiling. The walls of this palace are faced with white marble which is painted and gilded to half the height, the remaining portion being enriched with crystals. It is significant that Persian art in due course was transferred to Anatolia and greatly influenced design in Konia. Finally, at a later period this phase of decoration, combined with motifs from Egypt and Byzantium, was destined to form the basis of the Turkish style, the tomb of the Sultana Roxalana near the Suleimanyeh mosque at Constantinople being Persian in spirit.

THE INDIAN SCHOOL

From the foregoing account of the penetration of Islamic ideals it will be easily understood why it was that in all their main aspects the schemes of Indian decoration which claim to be Islamic embody similar features to those which inspired their form. In India the first Mohamedan invasion dates from the year A.D. 712, but the first organized Mohamedan kingdom was not established until the tenth century, with Ghasna as the capital. After the destruction of this city by the Afghans, Delhi became capital until its destruction by Tamerlane, but the apogee of Islamic art in India was attained under Baber (A.D. 1494-1531), when Persian forms began to assert themselves in the buildings of the North. Islamic art at first did not make an especial appeal to the native mind. But it did attract the artists whose business it was to minister to the luxury of princes and their dependants. It was cultivated eventually not only by the foremost artists, but became acceptable to the humbler craftsmen of Sind.

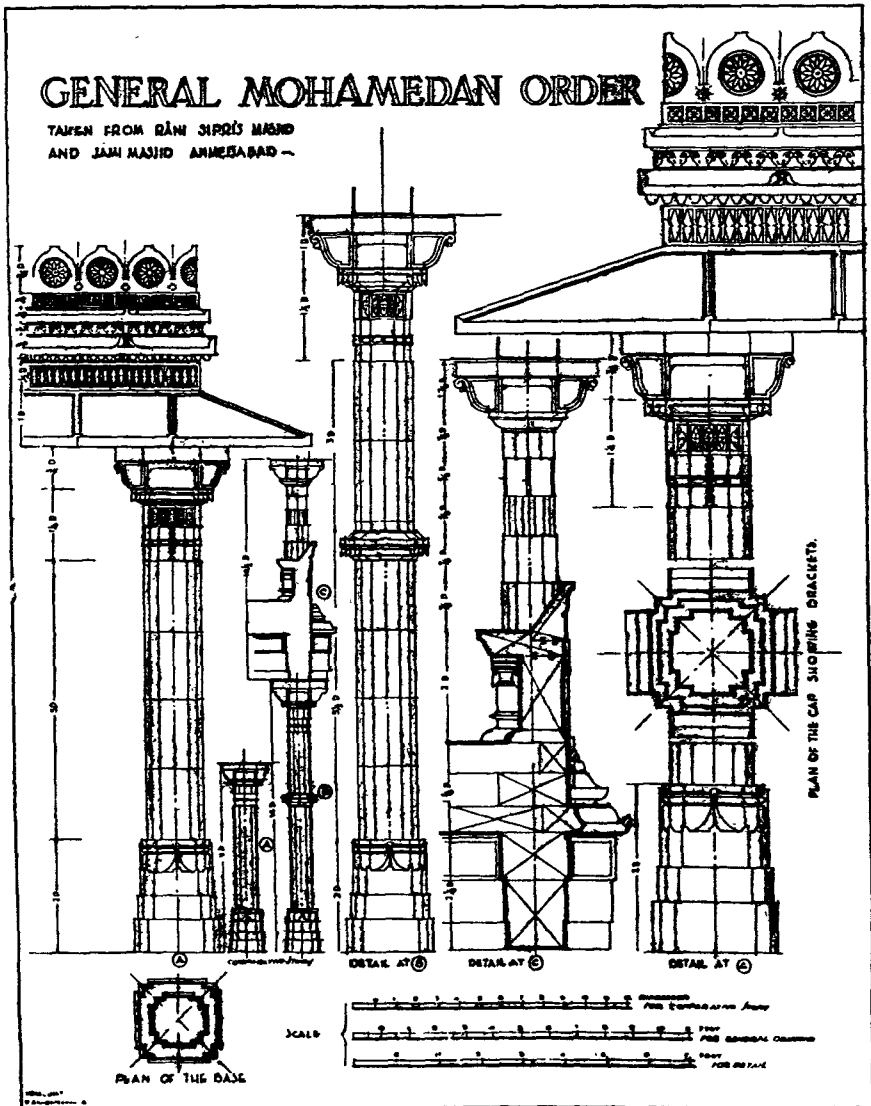
Although Islamic art in India has been divided into fifteen sections for purposes of literary convenience, it will be sufficient for the present



decoration of the tomb of Altamash at Delhi. The whole of this interior, with its squinches, blind arcades and horizontal bands of geometrical and calligraphic decoration, is confused in arrangement and fails to satisfy the eye.

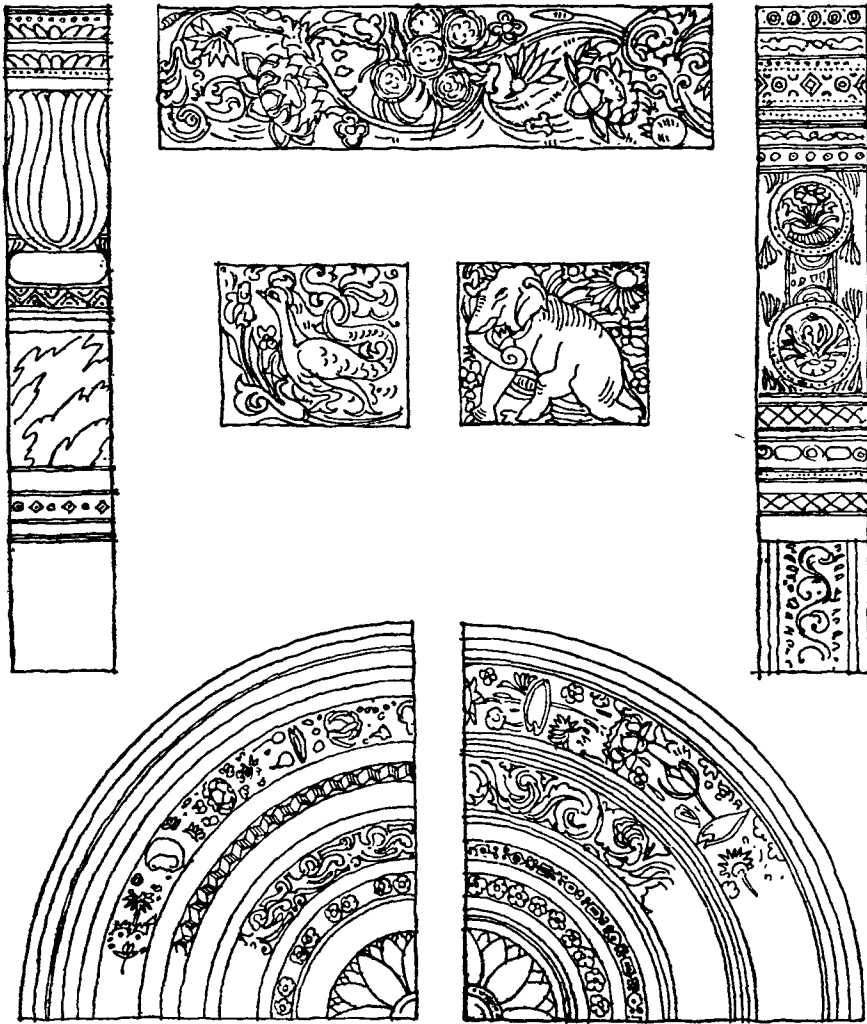
An almost analogous case exists in the interior of the mosque at Jaunpur, where many motives selected from Hindu temples are used and the ensemble presents a curious *mélange* of Hindu and Islamic details. No survey of this style could be undertaken without mentioning the interior of the mosque of Hilal Khan Kazi at Dholka, erected during the fourteenth century. In this building the ornament is definitely Hindu, but there is, however, a mingling of both styles, especially in the treatment of the pyramidal roof to the pulpit and the system of panelled ornament. As already described, it was under the dynasty of Baber, who conquered Agra in 1526, that Islamic art in India began to assert its sway. During the reign of the famous Akbar, who showed a strong predilection for Hindu art, the monuments of Agra and Delhi were endowed with motives derived from Pathan and Jaina buildings. If Akbar did not bring about reconciliation between the native and the Mohamedan religions, he at least achieved a revolution in favour of Islamic art and decoration. Henceforth the Mohamedan style was developed on lines consistent with the power of the ruling classes. The monuments of Futtehpore-Sikri testify to the amalgamation of the two styles, being more Hindu than Iranian. Among these palaces, that known as the palace of the Roumi-Sultana has decoration inspired from timber construction in which carved supports, brackets and delicate enrichments in wood are dominant. But the crowning marvel of Indian decoration arose when the greatest monument to the memory of a beloved consort was erected, the Taj Mahal at Agra. It has been stated that an Italian jeweller, one Veroneo, was the designer. It is beyond question that some of the details were carried out by Italian artists. This magnificent building, erected between the years 1630 and 1647, is built almost entirely of marble. The design of the interior reveals acquaintance with a system of classical architecture quite distinct from Islamic precedent, but the details and the forms belong to the best phases of Islamic art.

It is not surprising to find that the influence of these great works had a corresponding effect in shaping the vernacular style. The houses of the princes and of the higher ranks of the Indians, particularly those who



were Mohamedans, were decorated and embellished with a profusion of intricate ornament and carving. The furniture, the ornaments and the smallest utensils of metal and ivory were not only of admirable workmanship, but were designed in sympathy with the prevailing style. All this is evidence of the final acceptance of a style which began by penetra-

THE EXOTIC STYLES



INDIAN ORNAMENT: VARIOUS FORMS

tion and ended by absorption of local culture. The further this study is carried the more apparent becomes the striking character of Islamic art, its rich simplicity, as well as its latent possibilities of plastic modelling to suit fresh conditions.

All the evidences of artistic care and predetermination which have been gathered from authoritative sources prove the Islamic style in

India to have been the outcome of encouragement from the ruling princes. In no other way, not even by religious zeal, could such results have been attained.

It is in the direction of surface treatments, the inlaying of precious stones after the Italian *pietra dura* technique, the introduction of mosaics, as can be seen in the Gol Mandal at Udaipur in Rajputana, dating from 1623, that Islamic craftsmanship rose to great heights. The aim of the designer was to produce an internal atmosphere of mystery and seclusion, necessitated by climatic conditions. There was, moreover, the need to symbolize the dignity and power of the prince. This absolutism, expressed in terms of art, extraordinary as it may seem to European eyes, suited the conditions of Hindu life in which millions toiled at trades prescribed by law, where religious castes organized barriers which could not be scaled, and where the masses of the people were shackled without hope of emancipation. From the wall-paintings like those which embellish the palace of Akbar at Futehpore-Sikri can be gathered incidents of contemporary life, but to the art critic there is the significance of the blending of Persian with Chinese inspiration. The colours are blue, red, vermilion, yellow and gold, recalling the illuminated manuscripts of the Middle Ages in Europe. But these paintings have the additional value of throwing light on architectural compositions, the layout of gardens, the design of pavilions, the costumes and the jewellery. The personal decorations, the silk stuffs and the rich robes supply additional evidence of the disbursement of unlimited wealth.

Chapter 16

CONTEMPORARY DECORATION

HUMAN HISTORY RECORDS accumulating knowledge and increasing perception. Each generation bequeaths to the next the legacies which it has inherited, modified and qualified by its own taste. This rate of progress, as it is understood by the student of art, is irregular and spasmodic. For convenience historic styles have been analysed and classified between definite dates. Such literary arrangements are purely arbitrary, for experience has shown that principles of design are of greater importance than revivals of past fashions. The twentieth century has witnessed changes in art without precedent, and not the least has been the overthrow of those barriers which hitherto checked invention. This can be attributed to the great rapidity of production which is a feature of the age. Freedom of thought does not necessarily mean complete anarchy; on the contrary, it should encourage the re-establishment of those great principles which are the concomitants of masterpieces. The most ardent reformer desires nothing more than the removal of obstacles which constitute the chief bar to an understanding of decoration by the public at large. The development of a system of decorative art which is both logical and satisfying and at the same time belongs to the twentieth century is the aim of every artist. With the development of a simpler and a more rational expression in external architectural design there has ensued a corresponding movement in favour of plain treatments for interiors. The elimination of architectural detail, such as mouldings, ornaments and even panels, and the substitution of broad effects of colour has led to alternative schemes of decoration which are either contrast of colour or harmonious combinations of subdued tones. Lighting, both natural and artificial, plays an important part in all such schemes. The suppression of structural elements, other than the vertical and

horizontal planes of floors, walls and ceilings, or the expression of windows and doors, has led to the manipulation of surface treatments.

Interior design, therefore, has become unusually clarified and greatly influenced by contemporary painting. The desire to create subtle contrasts of design, which make an instant appeal to the eye, has in turn evoked a line of reasoning which gives more prominence to abstract qualities than to exact imitations of form. The influence of Cézanne on modern painters was not without result in changing the methods of decorators. From the extreme realism of the middle and late nineteenth century taste has veered to stylistic representations. In the pursuit of design *qua* design, where balance is of more importance than mere symmetry, and where purpose has a paramount value far greater than observance of historical syntax, colour and contrast are the objectives. Contemporary designers recognize that structural integrity, no less than considerations of economy, is also a factor in their work.

During the past fifteen years countless experiments have been made by artist decorators, in every European country and in America, to arrive at new interior treatments which avoid the repetition of historical styles. The vast labours of these artists towards a new artistic outlook has directly expressed the rapidity of modern progress. The emancipation of democracy and the more general participation of the public in all things has led to a demand for simplicity and utility in furnishing. At the same time, there has been an acknowledgment that beauty of form is important.

Interior decoration divides, as usual, into categories, ranging from schemes of monumental scale to the treatment of apartments in mansions, the decoration of small rooms in houses and flats, and the design of special treatments for theatres, cinemas, restaurants, exhibitions, galleries. Two schools of thought are in operation, one believing that design should be on the lines of natural evolution, and the other advocating a complete break with the past. Both methods may have their merits if the result is justified. It should not be forgotten that fashion does not remain inactive in either case.

On the monumental side the treatment of the interior of the theatre in the Champs Elysées, Paris, is not only an early example of adventure in design, but one that expounds ideas which have not dated. In this design the colour of the foyer and the auditorium is of one predominant tone. Contrast is obtained by points of interest, such as panels, sculp-

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ture and painting. The great auditorium of the Salle Pleyel, Paris, on the other hand, relies on the uniformity of colour given by the gilded texture of the walls, the form of the interior being determined by the acoustic requirements. The application of the gilding to the wall surface in a special technique accentuates the surface interest. This interior demonstrates the value of a background for the painted frieze by Jaulmes. Further, the structural forms, embellished with appropriate colour, established a leading principle of modern design. The Cambridge Theatre, London, is another example of the same methods.

The interior of the Mairie du Panthéon by Patouillard presents another solution of modern decoration where the national spirit has not been abandoned in favour of an uniform international handling. The influence of Léon Bakst in stage design and settings has not been unprofitable for contemporary artists. Exuberance of colour and a riot of abstract forms combine to produce a general harmony of design patterning. There are many interior designs, such as the Théâtre Pigalle, Paris, by Ziclis, the dining-saloons of liners such as the *Queen Mary* and the *Normandie*, and temporary exhibition pavilions which display flat veneered surfaces. In all these cases harmonies of colour are gained by the introduction of suitable textiles and paintings.

The erection of the vast new Town Hall at Stockholm gave serious opportunity for decoration of a permanent type. In this case tradition forms the basis of the departure. The scale of all the apartments is monumental and the designs have the character of longevity. The difference between designs constructed of substitute materials and fabrics, excellent for temporary use, and the employment of materials which are more lasting is beyond question. The reception-room of the Town Hall at Stockholm, with its tall windows and mosaic panels, is a frank interpretation of Byzantine art at its best. The new Library at Stockholm, with its circular reading-room, relies upon the internal arrangement of the circular bookcases. In this case the principle of utility determining ultimate effect is shown.

In Denmark great respect is paid to tradition for innovations in

interior decoration. The Police Headquarters at Copenhagen contains apartments which are classical in conception. For example, the Parole-salen, with its coffered ceiling from which artificial light is reflected, and the stamped leather walls of similar patterning, convey a unity of simplicity and harmony.

Similar treatment has been adopted in one of the committee rooms of the Royal Institute of British Architects in Portland Place, London. The Henry Florence Memorial Hall and the Council Chamber in the same building also exemplify tendencies of the day.

In Germany fine internal treatments can be seen in the Tietz Stores, Dusseldorf, ranging from the three internal courts where the structural supports are semi-classical to the eastern treatment of the Carpet Rooms. While on the subject of the internal design of great stores the following deserve special mention. In Paris, the interior of the Bon Marché, with its grey and gilded points of support and buff-coloured marbles, contrasts with the wrought-metal balconies. The interior courts of the Printemps, with the various stages of show-rooms forming part of the ensemble, the circular sweep of the staircase and the coloured glass of the dome demonstrate the value of pictorial unity and harmonious perspective. The development of the modern cinema in England has given unique opportunities to English designers to show their skill. The principle of maintaining sequence of internal form is fully understood. Gallery fronts are considered in relation to the design of the proscenium and the shape of ceilings agrees with the general disposition of internal structure. To quote an important example, the new Granada at Bedford fulfils all the canons of architecture and at the same time embodies the latest theories of planning and sighting.

The diversion of taste from the traditional form of interior design for theatres to a more rational expression of purpose began many years ago at Munich.

The new Shakespeare Memorial Theatre at Stratford-on-Avon can be named as one of the first buildings of the new type in England in which all the modern tendencies have been expressed. Finally, there is the consideration of Surrealistic decoration, which dates from the seventeenth century and is now in process of revival.

CHINA AND JAPAN

The styles of the Orient which have developed within the field of their respective civilizations form a vast study.

Chinese art takes precedence by virtue of its antecedents and great antiquity. No transient fashion attended its birth, neither has it been subjected to capricious whims during its progress through centuries of time. The secret of its calm, almost nonchalant, quality is to be found

in the search for the truths of nature which at all periods in its history inspired the artists and craftsmen of China.

Chinese decoration relies mainly upon colour for its appeal to the eye and to the æsthetic sense of beauty. Preference is conspicuous for varnishes, lacquers and enamels, incrustations of gold and mother-of-pearl. Vermilion red and green are the colours used with profusion. The greens are mostly of yellow or bluish tinge when employed in ceramic work. Polychromatic decoration in Chinese art has the symbolic purpose of impressing both the eye and the mind. Yellow announces imperial dignity, dark blue, turquoise blue, green, dull yellow and dragon's blood represent the five jewels of the Buddhist heaven. Thus in a Temple of Heaven everything is blue from the tiles to the glass. Carved surfaces of intricate design distinguish both wood and stone surfaces, and this is carried to small objects of jade, ivory and precious woods.

Chinese decoration abounds in geometrical patternings, of which the meander, derived from the Greek key, is the chief. Animal effigies, such as dragons and conventional lions and horses, are introduced either in isolated groups or forming part of surface treatments. Arabesques of foliage in the Persian manner, with other details transposed from Mesopotamia, belong to work of a later period.

All Chinese art has the great merit of being original and national. Fretwork is a very common motive in Chinese decoration, especially for brackets and screens. The Chinese Ting, or reception-hall, can be taken as a typical example of general interior decoration, tradition in this regard remaining constant and its practice general.

A description of the Chien Ching Kung in the Imperial Palace of Peking is representative of principles of decoration which have remained unchanged. In this splendid building painted timber is the main theme. A richly painted coffered ceiling of cellular pattern with carved centres, beams rounded and embellished with painted decoration, supporting columns of timber, the latter without bases or capitals, although in some cases sheathed metal cappings and bases are introduced. The trellis screen in stepped formation, with animal effigies on each step, is usual. The walls are painted with interlacing patterns in which the dragon usually features.

Floors are often of stone or marble, but timber is also common. The surfaces are broken up into small squares of repetitive design; the

predilection of the Chinese designer for intricate patterning is revealed in the treatment of timber ceilings, which sometimes assume circular formations, as can be found in some of the monuments of Jehol, the general principle being a system of tiered effects in which a flat band of coffers forms the contrast. A series of thin repetitive brackets is productive of an effect of stalactites. Where such domed ceilings are employed, the circular central panel at the top is carved with the representation of a writhing dragon. Another type of design far more common arises from the traditional use of timber and bamboo for trusses and roof supports. Here the system is that of articulated structure, carved, painted and embellished to taste. It must not be forgotten that the technique of Chinese decoration owes much to the excellence of the woodwork and the strict observance of the principles of carpentry.

An account of the colourful past of Chinese decoration would be incomplete without reference to the sign-symbology of shops and bazaars, and the minor details of social life. The typical shop fronts of Pekin provide innumerable instances of polychromatic decoration. In point of fact, the upright poles painted bright red and capped with gilded finials, from which are suspended the symbols of the different trades, businesses and crafts, embody forms and colours reminiscent of furnishings and objects of everyday use. Further, each symbol has a significant and special meaning. In interiors of lesser importance printed and silk papers, highly coloured, form the basis of the wall decoration and provide contrasting surfaces to the ceilings. Many of these printed wall coverings are extremely beautiful, the subjects varying from pictorial records of tea-planting and agricultural pursuits to those depicting scenes of domestic life. The lesson to be gained from Chinese art is the value of communal as opposed to individual contribution. This in reality implies the just difference that exists between the arts of the Orient and of the Occident.

There is evidence in Japanese art of Christian influence as early as the seventh century A.D.; broadly speaking, therefore, Japanese art is mainly derived from that of China. As a result the craft of carpentry was carried to a pitch of perfection which even excels that of China. The art is that of manifestation of the Buddhist religion of meditation and detachment. Derived from the simple constructions of Korea, it initiated outlines extremely simple, relying on proportions and rhythm of line for sublimity of composition.

The interior of the Howodo at Uji, a few miles from Kyoto, is unrivalled for magnificence of effect.

The work of the Fujiwara period has the woodwork wonderfully embellished with carving, the coffered ceiling inlaid with ivory, mother-of-pearl and silver, and below the surfaces are gilded and enriched with polychromatic decoration.

In the twelfth century A.D. Japanese art took on a purely national character, and in the fifteenth century it attained to perfection under the dynasty of the Ashikaya, as can be seen in the design of the palaces of Kyoto already described. In the sixteenth century more picturesque effects were aimed at, and this resulted in the decline which took place during the seventeenth and eighteenth centuries. Unlike the Chinese veneration for subtlety of colour, Japanese art favoured strong contrasts of gilding and vermilion accompanied by reddish browns, violets, yellows and greys. The interiors are often decorated with paintings on paper affixed to panels and attached to vertical wall surfaces.

The domestic interiors of Japan provide direct evidence not only of the continuity of tradition, but of an appreciation of simple rules of composition which are intelligible at a glance. The nature of the construction of these interiors provides the key to their effect. Wood and plaster, combined with rice paper and straw coverings, constitute the materials usually employed. Rice paper, with its fine creamy-white texture, forms an important element in all schemes of decoration. It is stretched over the latticing of windows, or the framing of sliding screens and dividing partitions forming separate apartments. The fusuma or dividing partitions are decorated with drawings of birds and flowers lightly delineated or wrought with black ideographs. Sometimes the paper is faintly tinted or decorated by the admixture of delicate seaweed. During the great periods of her national civilization, Japan played an important part in contributing to the art and theory of decoration. The subsequent adoption of modern ideas from Western Europe and America has not only modified the national tendencies, but has resulted in the vulgarization of all the arts and crafts.

INDIA

In every page of art history fresh evidence is offered of the effect of religious doctrine on art, irrespective of intellectual culture or independent social achievement. Such a case is presented by the story of art in

India. The influence of the two chief religions of the Indian peninsula, namely, Brahmanism and Buddhism, resulted in two dissimilar expressions of interior treatments. The beginning of the seventh century A.D. marked the apogee of Brahmanism in that part of India stretching from Kashmir to Assam and comprising Nepal. The construction of temples between the eleventh and the fourteenth centuries, like the Great Temple of Bhuwaneshwara, and others, as well as the Palace at Chitor, are remarkable examples in assembling and decorating materials. This process continued, despite the Islamic conquest of the sixteenth century. The after results may be seen in the Temple of Brindaban, or other temples in the vicinity of Benares. The model of design is based on the rock-cut traditions of ornamentation. The Buddhist style, mainly developed in the region of the Ganges and Central India, spread as far as Ceylon, and flourished between the third century B.C. and the sixth century A.D. The interior of the Chaitya of Karli consists of vertical supports in the form of polygonal columns with heavy capitals, and bases of vase form, supporting a barrel roof consisting of worked stone ribs. The interior can be described as partly derivative from types of timber construction translated into terms of rock-cut monolithic design.

The interiors of the Kailassa at Ellora depict the tendencies of the Brahman school, an example of extraordinary magnificence being the interior of the temple of Tejpala, which belongs to the type of Jaina construction. This is a masonry-built interior. The columns constitute an order of peculiar intricacy, supporting brackets which in turn aid in supporting the horizontal beams. The ceiling spaces marked by the beams are divided into small patterns of shallow character. In this type of Hindoo architecture and decoration Hellenistic influence can be seen. In Indian architecture at least six different styles are encountered, namely, Buddhist, Jaina, Hindoo, Hindoo-Hellenic, Dravidian and Chalukyan, not mentioning the Islamic, to which reference has already been made.

The repertory of the creative art in India comprises a limited selection of patterns of geometrical type, such as plaited motives, beads, discs, dentils and flutings, all of which are of Persian or Greek origin. Effigies of elephants, lions, tigers and horses, as well as the human figure, were introduced as occasion offered.

It can be taken as an axiom that all Hindoo decoration is derived from the wooden prototypes of the Mauryan period. Thus wood and ivory carvings have influenced larger structural features, especially in interiors.

Pictorial art applied to the decoration of interior walls is described in the books of the Pali Buddhist canon (fourth century B.C.). The palaces of the Kings of Magadha and Kosala were adorned with designs of frescoes and panels, and similar paintings are mentioned in the *Ramayana*. The older examples, however, exist in the Jogimain Cave of the Ramgadh; these consist of concentric circles enriched with geometrical designs and representations of figures.

Study of the various examples of Hindoo architecture shows the interiors to repeat the characteristics of the exteriors, the chief difference, however, being the introduction of painted frescoes for the adornment of large wall surfaces. The Hellenistic tradition, which dates from the time of the Alexandrian conquest of Bactria, left a profound impress on the development of carving in low relief, especially the treatment of rectangular piers.

The art of India to a great extent reveals the impact of the art culture of many forces, particularly Persian and Chinese. But the reaction of climate, religious and local traditions on the invading forces has resulted in a fusion which constitutes the Hindoo style. Thus, from Alexandrian to Mogul times, the continuity and the universality of architecture throughout India has been assured of a peculiar character. Even to-day, when modern complexity threatens to obliterate the native styles, in the cities and towns the Islamic and the Hindoo styles are still understood. While the Hindoo branch flourishes in centres away from the great cities, the Hindoo-Islamic has created its own distinct values.

CONCLUSION

Reviewing the developments already examined, and considering them as a whole extending from the earliest times to the present day, the effect of unity, of continuity and of dramatic intensity is conveyed to the mind. Looking at the results merely from an æsthetic point of view, a vast number of precedents exist to record an infinity of ideas. Improvement succeeding to improvement in the handling of material in slow succession characterizes the earlier stages of architectural history.

Throughout the ages the art of architecture has fulfilled a utilitarian purpose. The conception of the artist limited by the nature of available or procurable material has determined both scale and special character. The mind of the designer itself is susceptible to current events, political, social and intellectual. Sheer innovation under the foregoing conditions

has ever been an impossibility, and there is no indication that fundamental conditions are likely to change. All new styles have been preceded by a transitional period where the new, progressing by stages, was grafted on to existing forms. It has been shown in the various chapters that each successive change in style responded to causations outside the immediate architectural orbit.

When periods of architecture and design are investigated impartially, it is found that each and several are true to the period of their inception and could have resulted in no other way. In other words, architecture not only reflects, but crystallizes current mentality. The humanist in art is one who holds himself open to receive truth unprejudiced as to its source. And what is more cogent, after receiving the truth he realizes it to be his duty to interpret truth by virtue of his artistic personality. The true artist revolts against vulgarity, ostentation and fashion.

Art is permanent, but varies like human nature itself; it is the outcome of faith and ardent conviction. No style can survive unless it is based on truth and inspired by the flame of faith. The ideal of human conventions, that fine architecture expresses, is the outcome of forces in equipoise, physical, intellectual and moral. It aims at nothing beyond its own power, it is circumscribed by the brain of man pursuing two rival tendencies, imagination and reason, inspiration and method. The reward of the true artist is to unite his work with enthusiastic invention and diverse aspirations intelligently organized. Simplicity does not result from lack of originality, but is often the outcome of disciplined caprice. Art in its infinite possibilities has no limits, but its foundations must be established. Past experience of former civilizations, of artistic ideas recently acquired, combined with temperamental and personal conceptions, combine to produce a work of outstanding merit. Each fresh phase of artistic development carries with it the germ of change of thought and outlook which will eventually affect style at a later period. Slow and intelligent evolution is the mainspring of the arts. The history of architecture is the account of every mood of which the human heart and understanding are capable. It is the concrete record of the fusion of different races, of languages and religions. It is not to be believed that the entire mission of art has been achieved in the past; the future itself has in store still greater possibilities.

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INTRODUCTION TO ILLUSTRATIONS

IN order to facilitate study of the subject as a whole, the half-tone illustrations have been grouped in sequence. This system of pagination is accompanied with additional descriptive text in the form of analytical notes. At the same time the illustrations are arranged in conjunction with the chapters to which they are related.

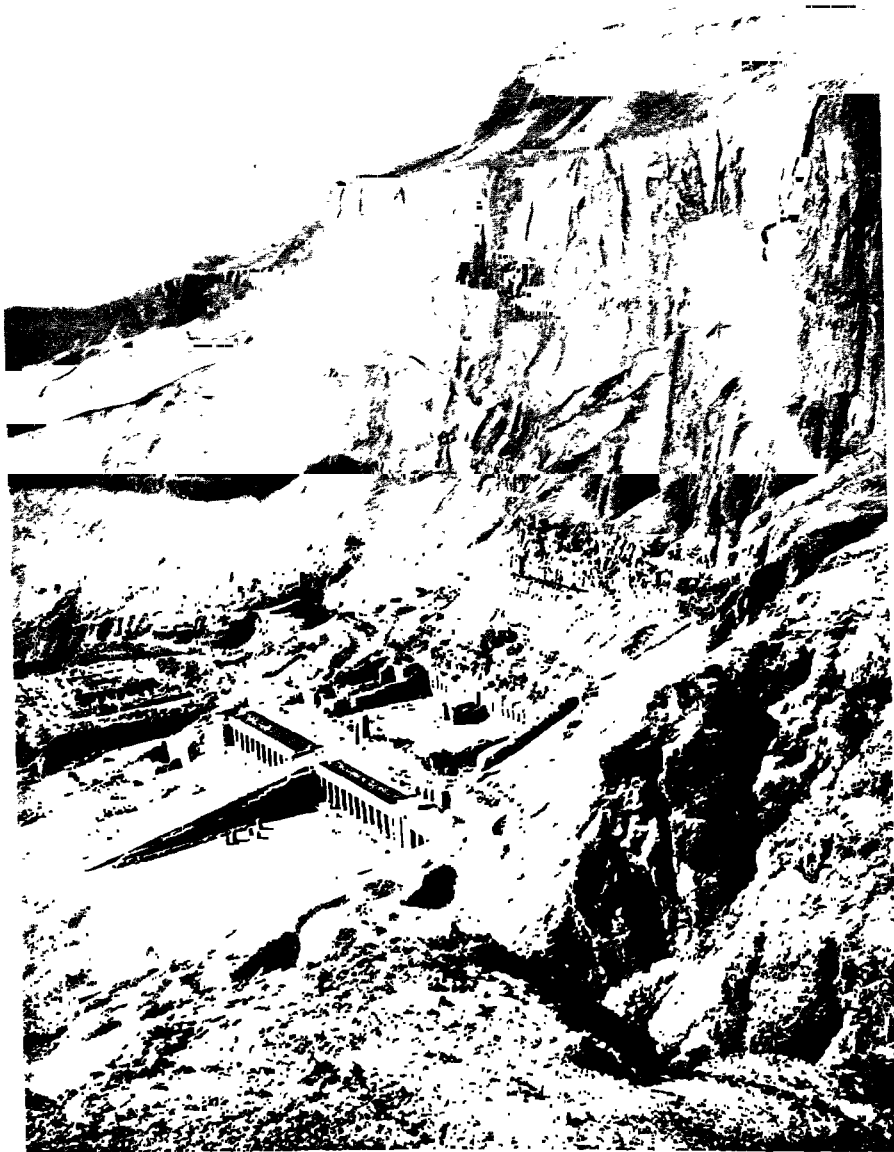
The difficulties of obtaining suitable subjects from such diverse sources will be appreciated. Many new views of well-known buildings, as well as of other structures not previously described, will be found. The main fact that Architecture is largely the result of predetermined thought, controlling the adaptation of form and material to ever-changing needs, is, it is hoped, brought into prominence by the illustrations.

PART I

Chapter 2

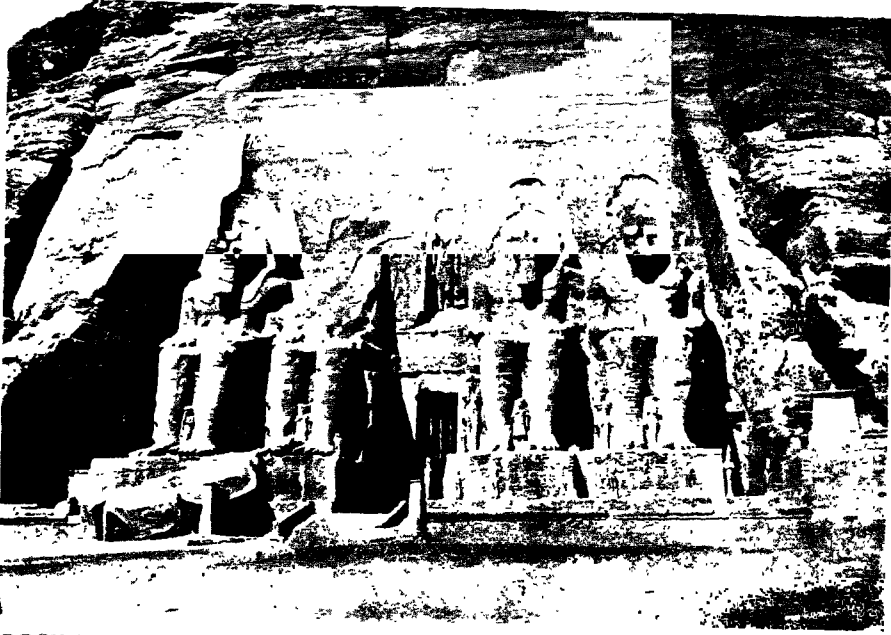
A Summary of Architectural Composition in the Past

▼

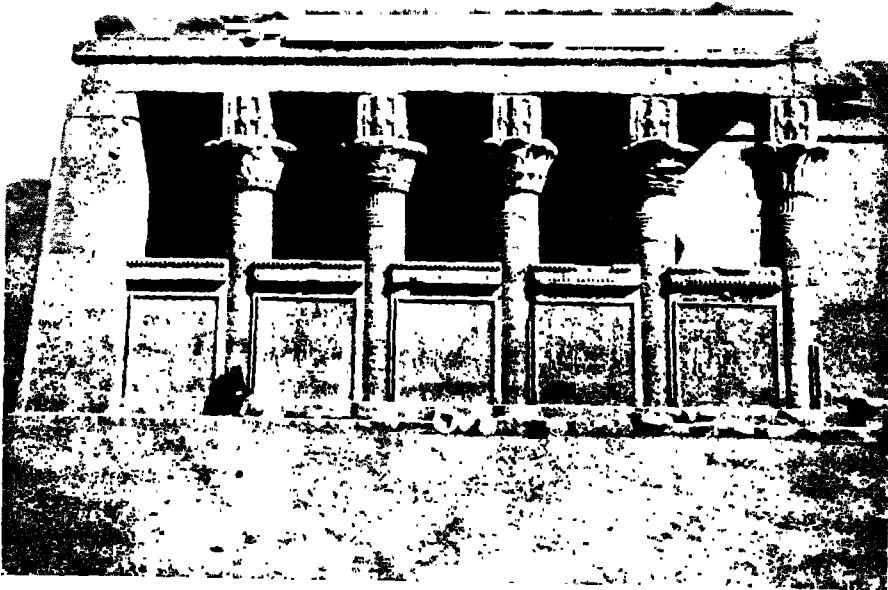


TEMPLE OF QUEEN HATSHEPSU, DEIR-EL-BAHARI. DESIGN FORC'D BY
CONFIGURATION OF THE SITE

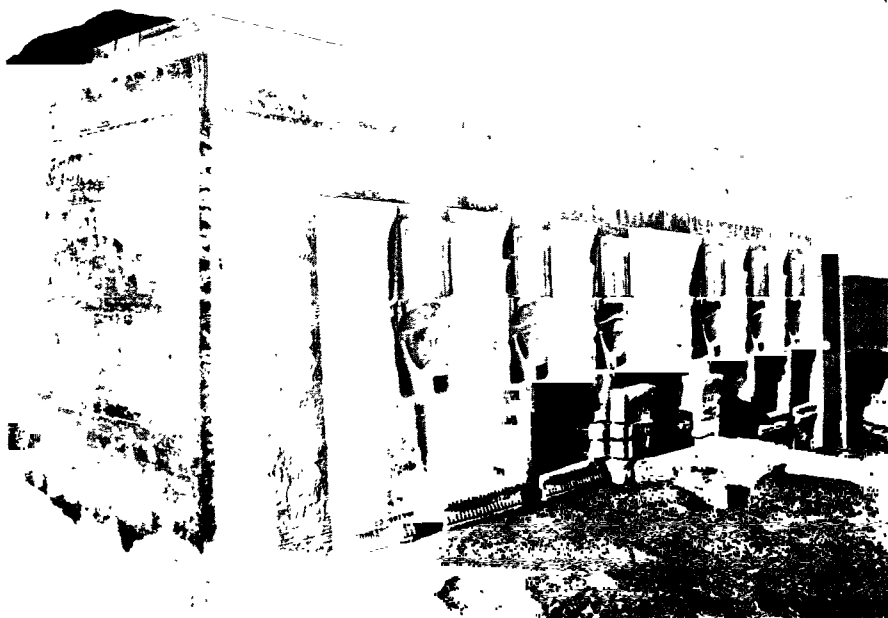
Low horizontal lines contrasting with vertical background.



ROCK TEMPLE, ABU SIMBEL. DRAMATIC COMPOSITION INTRODUCING GIANT FIGURES



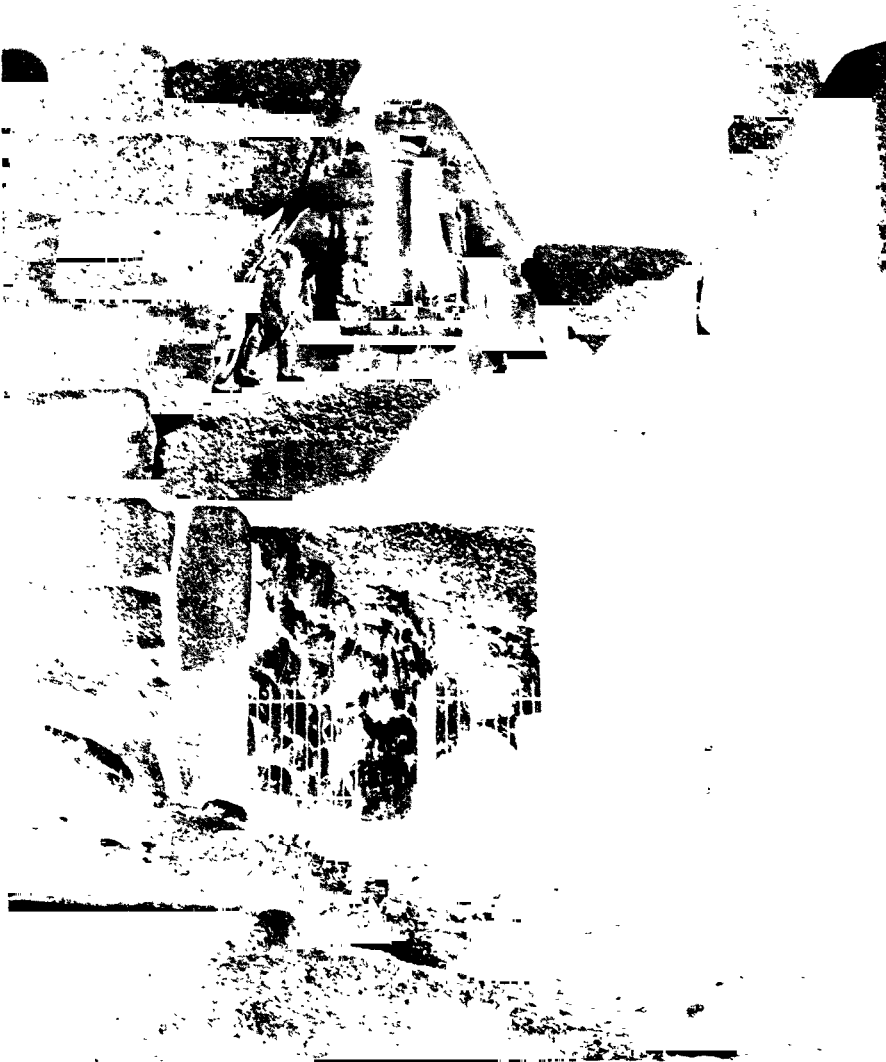
TEMPLE OF HATHOR, DENDERAH. A COLUMNAR TREATMENT COMBINED WITH
STONE SCREENS



TEMPLE OF HATHOR, DENDERAH. ADAPTATION OF MASKHEAD AND COLUMN TO FORM AN ARCHITECTURAL ELEMENT

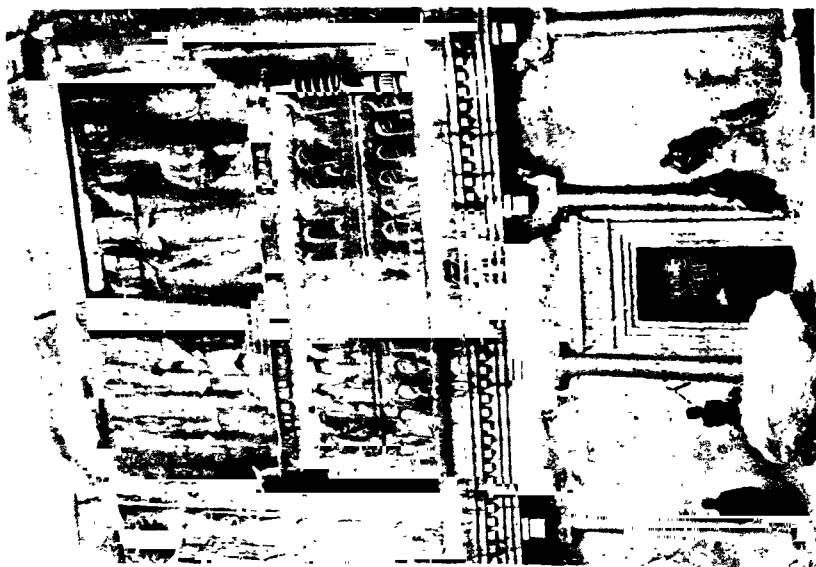


NORTH ENTRANCE, PALACE OF KNOSSOS. RECONSTRUCTION OF INTERNAL STAIRWAY SHOWING INTRODUCTION OF TAPERING COLUMNS AS STRUCTURAL ELEMENTS



LION GATE, MYCENÆ. A STRUCTURAL DESIGN IN WHICH CORBELLED STONES FORM
A RELIEVING ARCH OVER A GREAT DOORWAY

Predetermination of lintel shape arising out of constructional requirements.

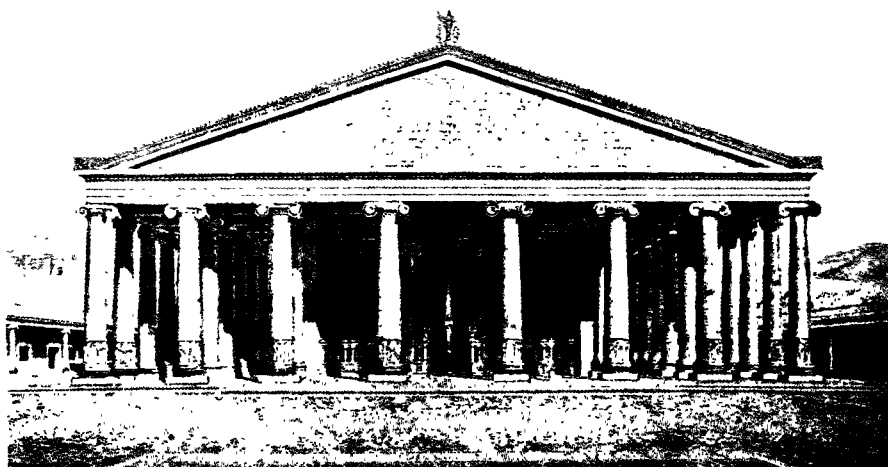


TOMB OF DARIUS PERSI-POLIS. SYMBOLICAL
Design

Showing palace front adapted to the purposes of a rock-cut tomb.



PORTICO OF XERXES. SYMBOLICAL DESIGN
Architectural pylons combined with scripted man-headed bulls of Assyrian origin.



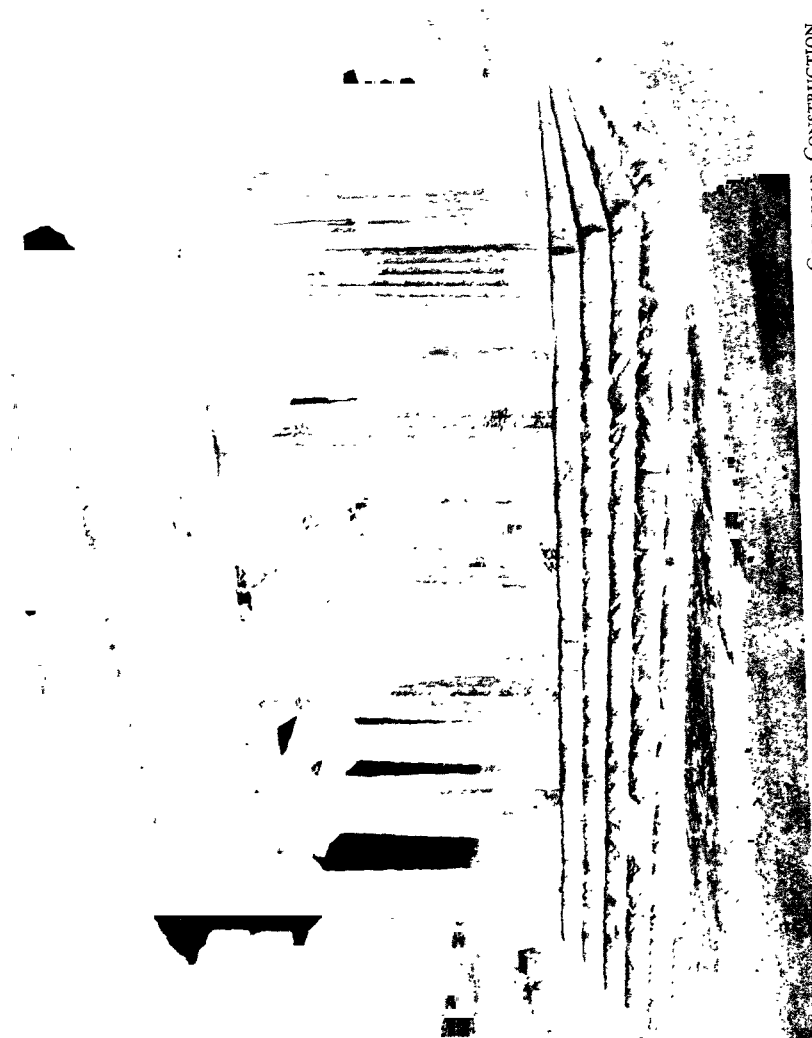
A. ARCHAIC IONIC TEMPLE



B. HELLENISTIC IONIC TEMPLE

FIRST AND SECOND TEMPLES OF DIANA AT EPHEBUS

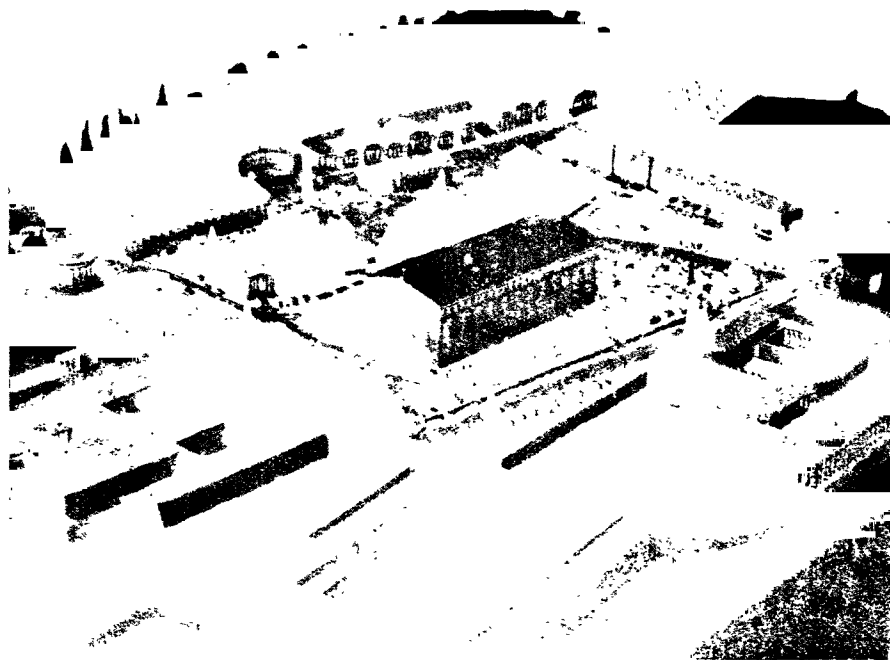
Both designs illustrate the slow development of Ionic architecture and variations in the treatment of an octastyle portico.



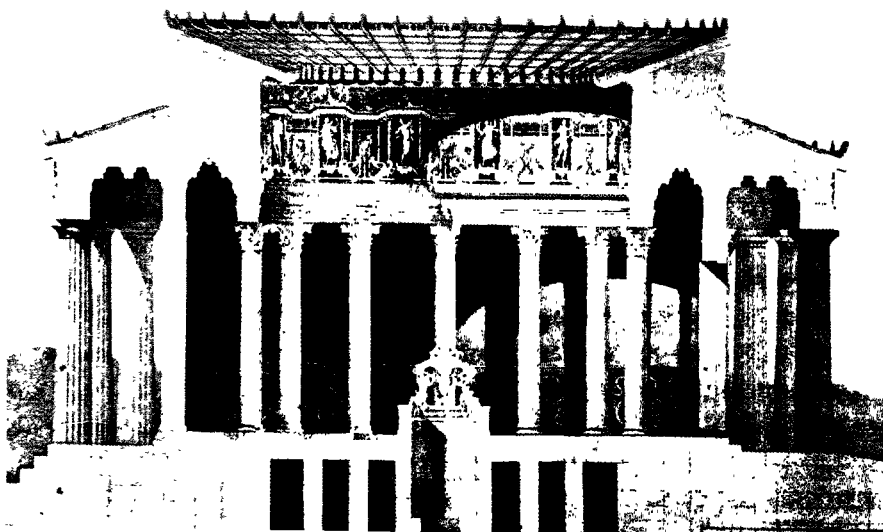
TEMPLE OF CONCORD, GERGENTI. EXAMPLE OF TRABEATED AND COLUMNAR CONSTRUCTION
The podium consists of a series of steps forming crepidoma.



GREEK TEMPLE, SEGESTA. EXAMPLE OF HEXASTYLE PERIPTERON



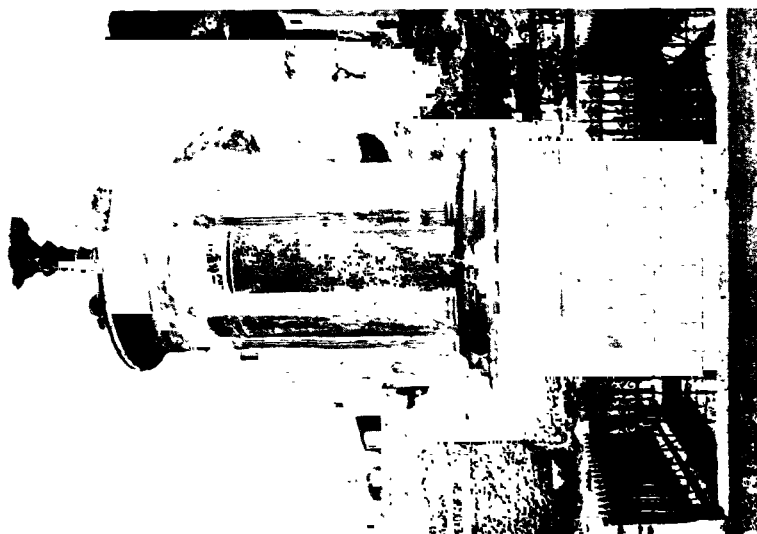
MODEL OF ANCIENT TEMPLE GROUP AT OLYMPIA. SHOWING ASYMMETRICAL FORMATION OF PLAN TO SUIT CIRCULATION OF PROCESSIONS



THOLOS AT EPIDAUROS. BUILDING DERIVING ITS VALUE IN THREE DIMENSIONS FROM THE USE OF THE CIRCLE IN PLANNING



THEATRE AT EPIDAUROS. CONCENTRIC TIERS OF SEATS DEVELOPED AROUND THREE SIDES OF THE CIRCULAR ORCHESTRA



LYSICRATES MONUMENT, ATHENS

EXAMPLES OF SMALL MONUMENTAL STRUCTURES EMBODYING

The horizontal subdivision in each case provides a contrast to the mass and the silhouette.



TOWER OF WINDS, ATHENS

EXAMPLES OF SMALL MONUMENTAL STRUCTURES EMBODYING

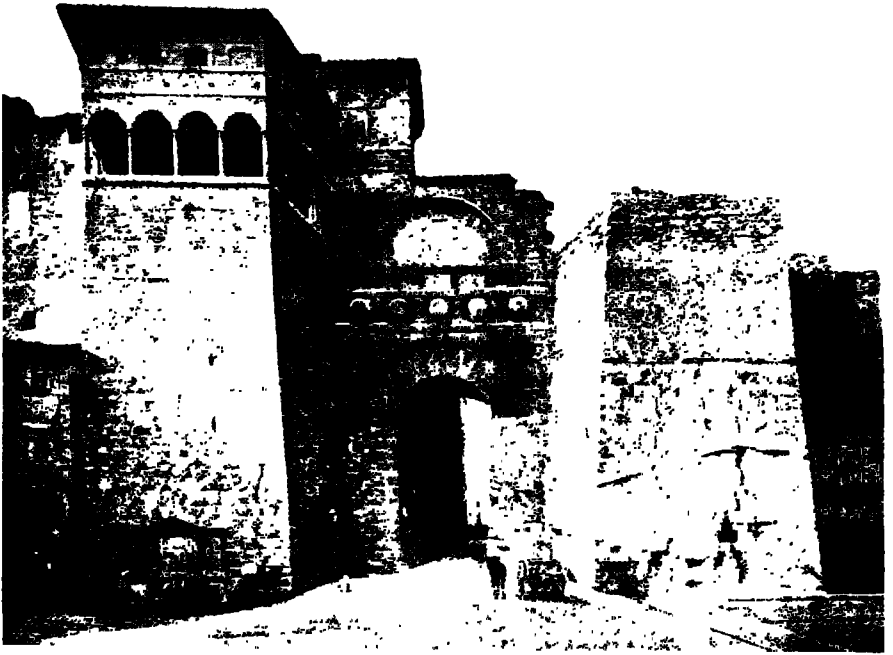
The horizontal subdivision in each case provides a contrast to the mass and the silhouette.



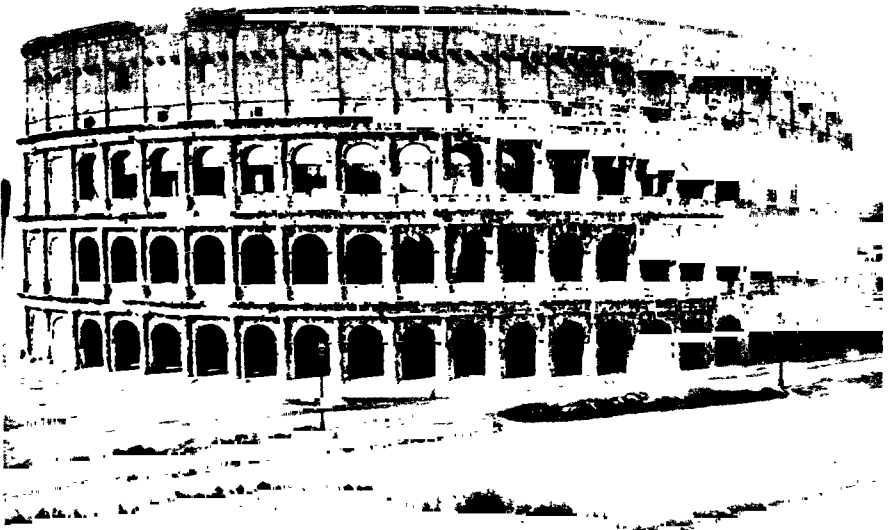
THE PORCH OF THE MAIDENS AT ATHENS. A TRIDUNE DESIGN WITH SUPPORTS IN THE FORM OF HUMAN FIGURES



GREEK TREASURY. EXAMPLE OF DISTYLE IN ANTIS WITH END WALLS OF THE CELLA
PRODUCED TO FORM ANTÆ

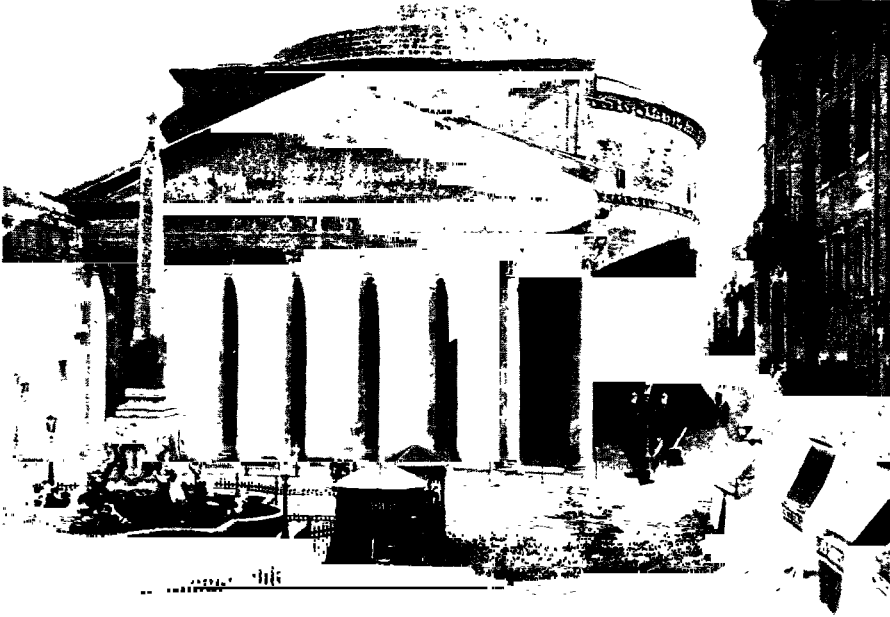


ARCH OF AUGUSTO, PERUGIA. EXAMPLE OF ETRUSCAN ARCH CONSTRUCTION

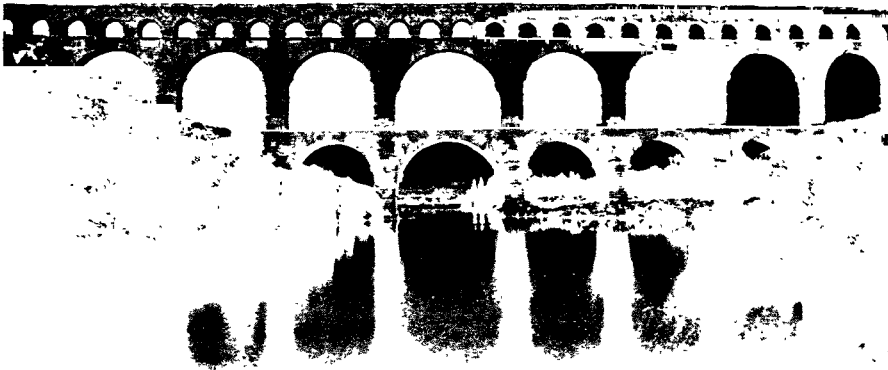


THE COLOSSEUM, ROME. ARCHITECTURAL TREATMENT OF STONE SCREEN WALL TO EXPRESS TIERED CONSTRUCTION

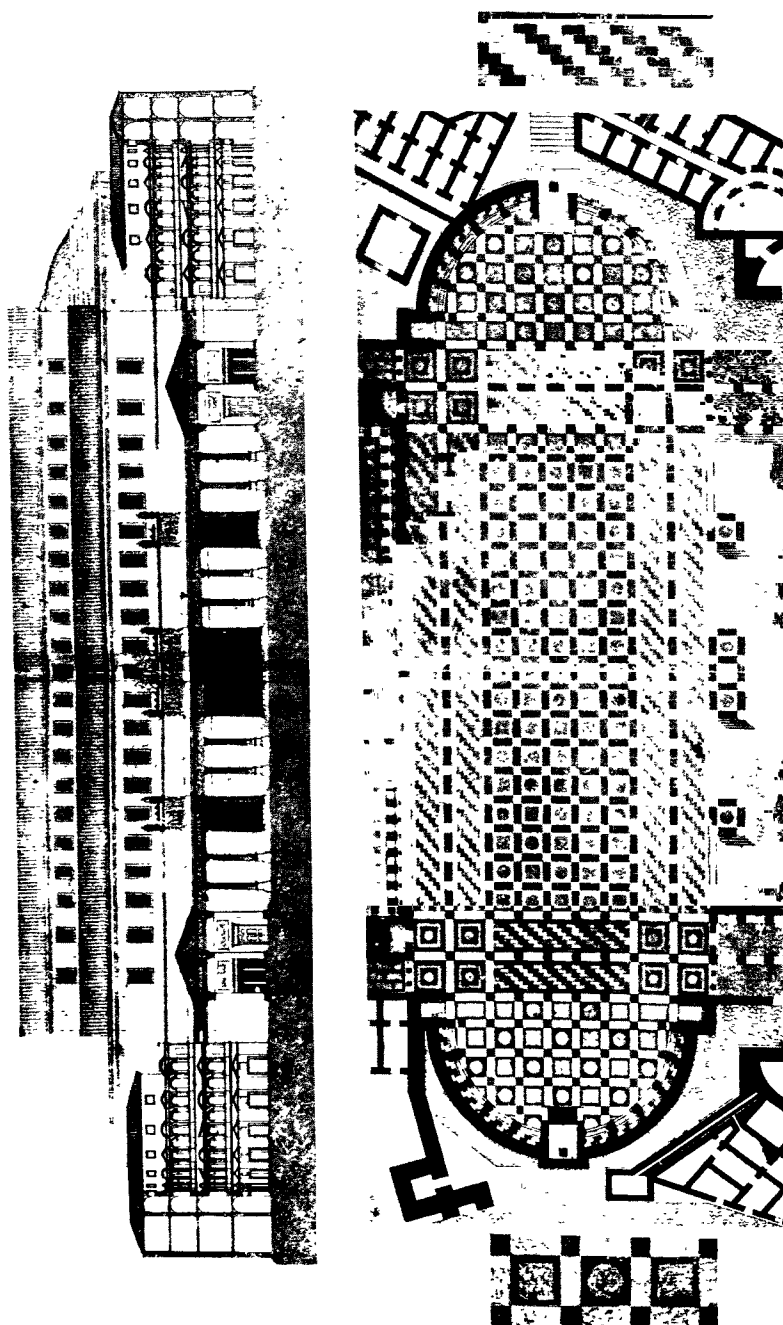
Arches repeated in three tiers contrast with attic storey which supports velarium masts. High bases to columnar treatment assist in concealing internal stairways and afford strong horizontal bands.



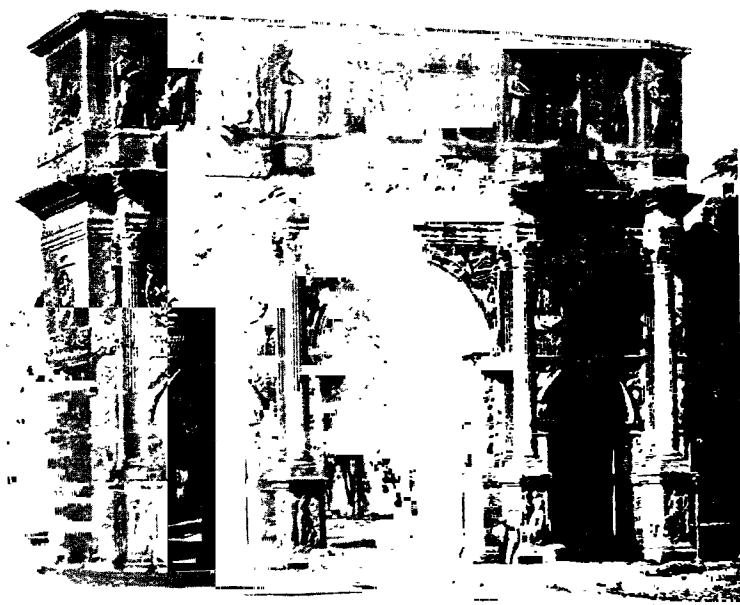
PANTHEON OF AGRIPPA, ROME. COMPOSITION EMBRACING CIRCULAR AND RECT-
ANGULAR FORMS



PONT DU GARD, NÎMES, FRANCE. AN EXAMPLE OF MONUMENTAL ENGINEERING.
ARCUATED CONSTRUCTION DETERMINED BY POSITION OF ROCKS IN RIVER-BED
Arches repeated in two tiers and contrasted with series of small arches carrying the Aqueduct.



BASILICA OF TRAJAN, ROME. RECONSTRUCTION FROM CANINA
Monumental plan with central Nave and Aisles.

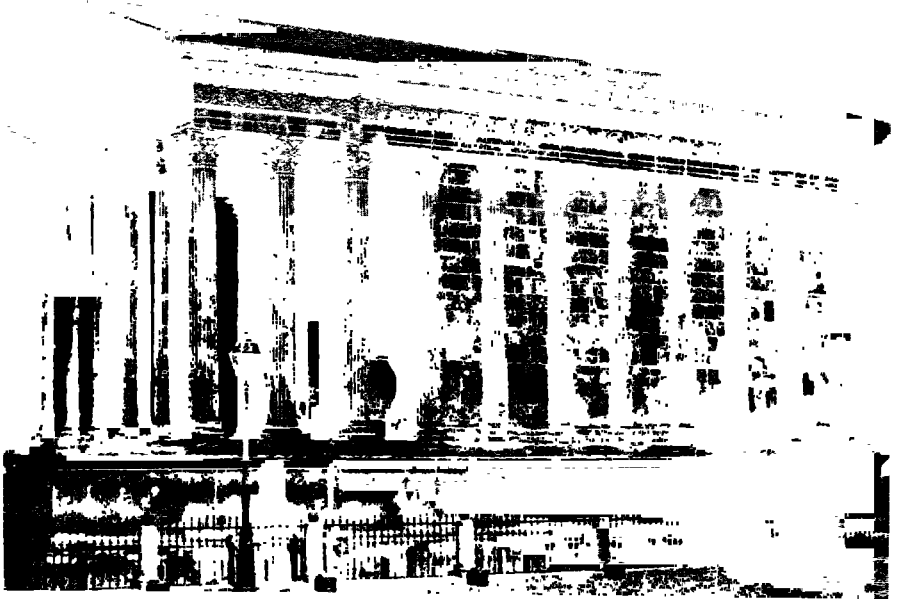


ARCH OF CONSTANTINE, ROME. TRIPARTITE SUBDIVISIONING CONTRASTED WITH RECTANGULAR MASSING OF MAIN STRUCTURE

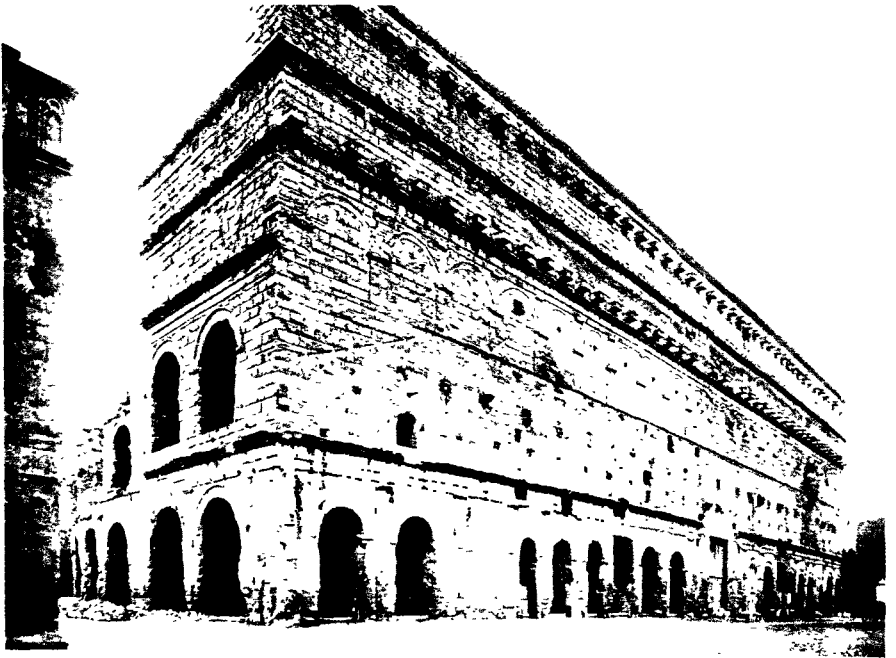


TEMPLE OF FORTUNA, VIRILIS, ROME. EXAMPLE OF PSEUDO-PERIPTERAL TEMPLE OF EARLY PERIOD

The podium takes the place of the Greek crepidoma.



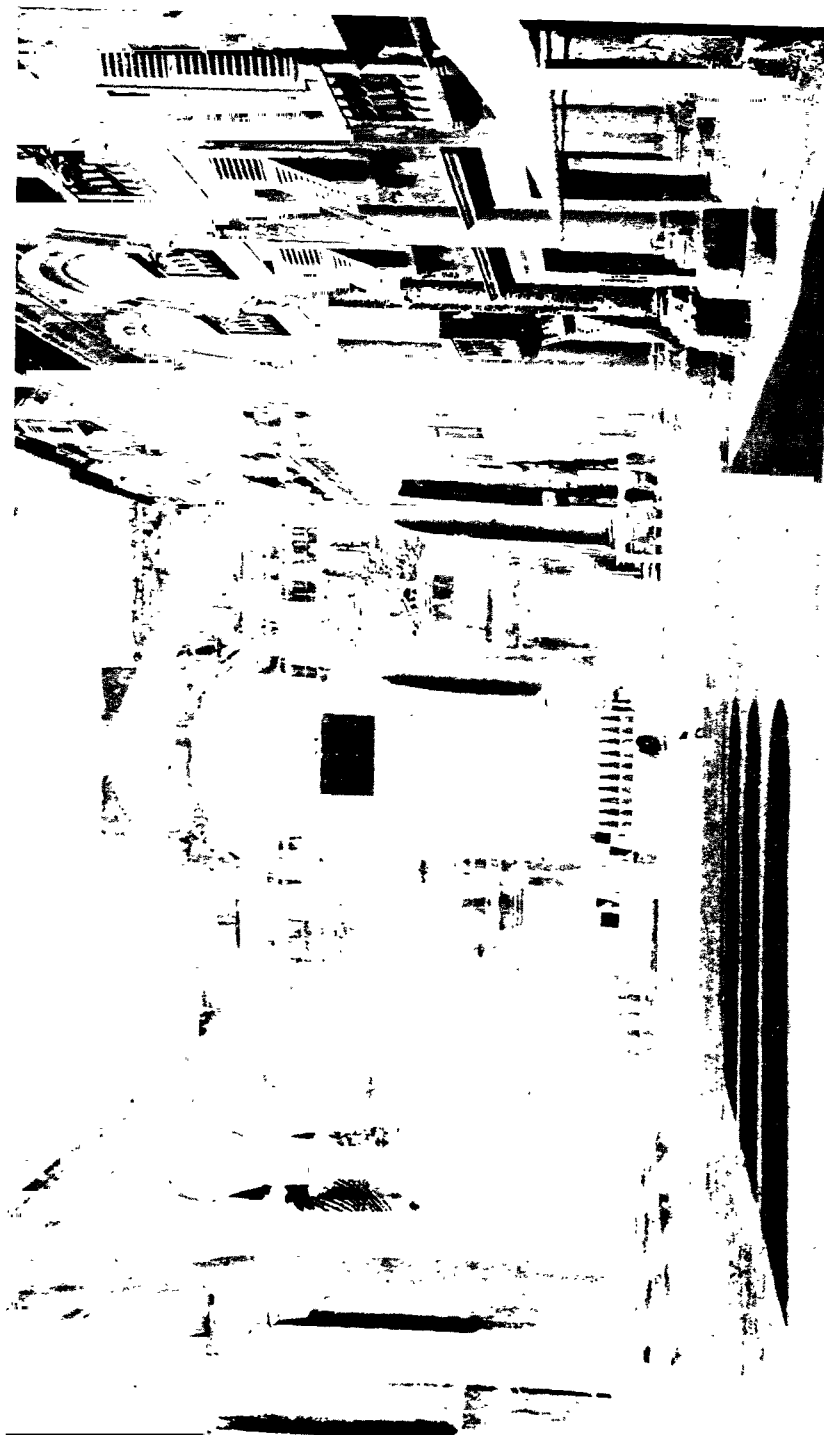
MAISON CARRÉE, NÎMES, FRANCE. TYPICAL EXAMPLE OF ROMAN PSEUDO-PERIPTERAL TEMPLE ON PODIUM WITH STEPS FORMING PART OF FRONTON



THEATRE AT ORANGE, FRANCE. STRUCTURAL TREATMENT EXPRESSING BACK WALL OF STAGE



MONUMENTAL TOMB AT ST. RÉMY, FRANCE. PYLONIC COMPOSITION
The effect obtained through combining several small elements to form base, main body and crowning part.



PALACE OF DIOCLETIAN, SPALATO. AN EARLY EXAMPLE OF THE FREE USE OF CLASSICAL ELEMENTS, PARTICULARLY THE TREATMENT OF THE SIDE SCREENS, WHERE THE ARCH SPRINGS DIRECTLY FROM THE CAPITALS

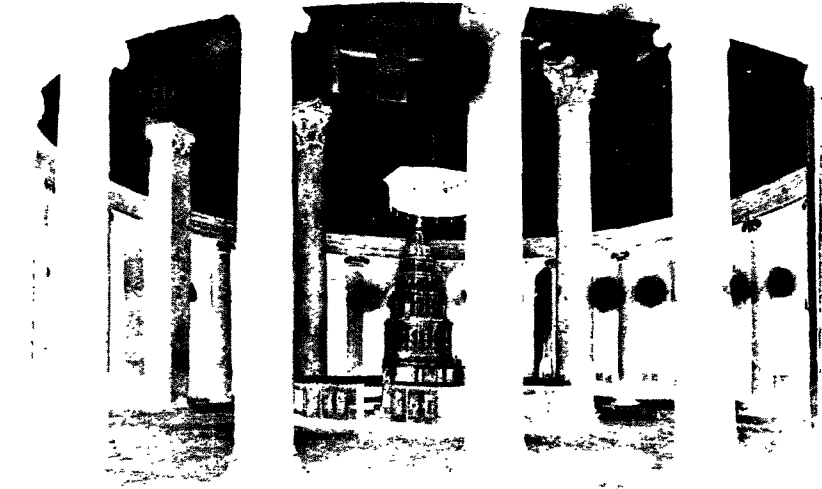


CHURCH OF THE NATIVITY, BETHLEHEM, A.D. 330. A BASILICA PLAN ANTECEDATING THAT OF S. PAOLO FUORI LE MURA, ROME, BY FIFTY YEARS

The clerestory wall is carried on a tribated system of columns which screen the side aisles.



TOMB OF GALLA PLACIDIA, RAVENNA, A.D. 420. A CRUCIFORM PLAN SHOWING ARRANGEMENT OF DOME CONSTRUCTION, WHICH LED ULTIMATELY TO THE DESIGN OF THE DOME OF SANTA SOPHIA, CONSTANTINOPLE.



S. STEFANO ROTUNDA, ROME, A.D. 470. THE LARGEST CIRCULAR CHURCH IN EXISTENCE WITH CIRCULAR AISLES

The lighting is obtained from the raised clerestory.

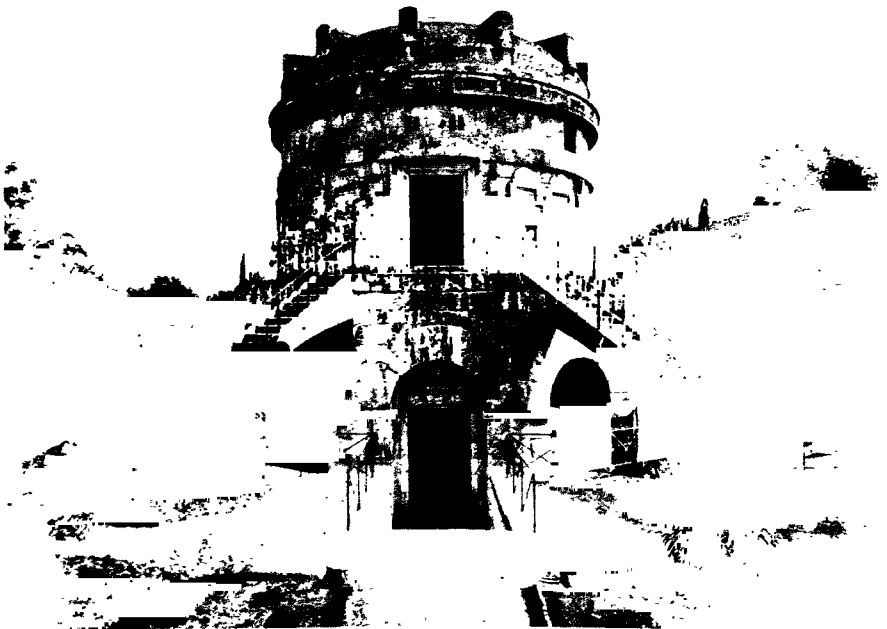


BASILICA OF S. LORENZO, ROME, A.D. 432-578. PROTOTYPE OF ROMANESQUE DESIGN DERIVED FROM BASILICAN PLAN AND EXPRESSING NAVE AND AISLES



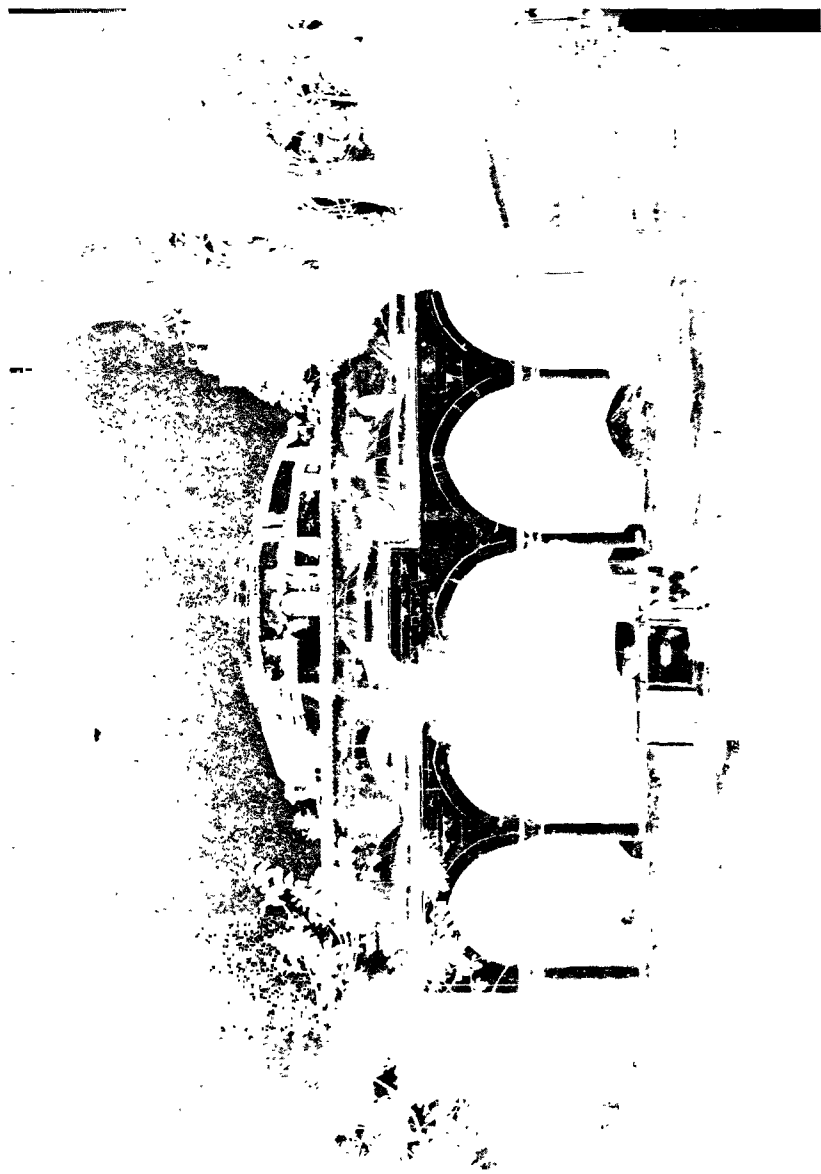
CHURCH OF SAN VITALE, RAVENNA, A.D. 526. ROMANESQUE DERIVED FROM
BYZANTINE AND ROMAN ARCHITECTURE

Octagonal plan expressed in elevation by raised drum of similar form containing spherical dome.



TOMB OF THEODORIC, RAVENNA, A.D. 530. AN EXAMPLE OF MONUMENTAL
CONSTRUCTION FOLLOWING ROMAN PRECEDENT

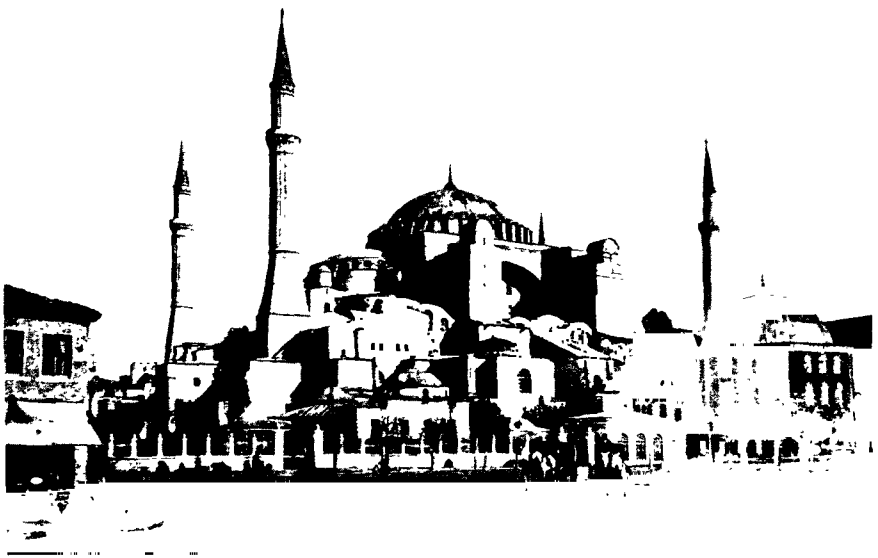
The roof is formed of one great stone.



CHURCH OF S. SERGIUS AND BACCHUS, CONSTANTINOPLE, A.D. 527. Now the Mosque, Kuti Huk Aya Sophia
Byzantine Church presenting features similar to Santa Sophia. The Turkish portico is a later addition.



CHURCH OF THE TWELVE APOSTLES, SALONICA. DESIGN EXPRESSING FORMATION OF PLAN ABOVE ROOF-LINE



S. SOPHIA, CONSTANTINOPLE, A.D. 532. EXTERNAL CURVATURE OF DOME EXPRESSING EXACT FORMATION OF INTERIOR
Development of plan vertically assists silhouette.

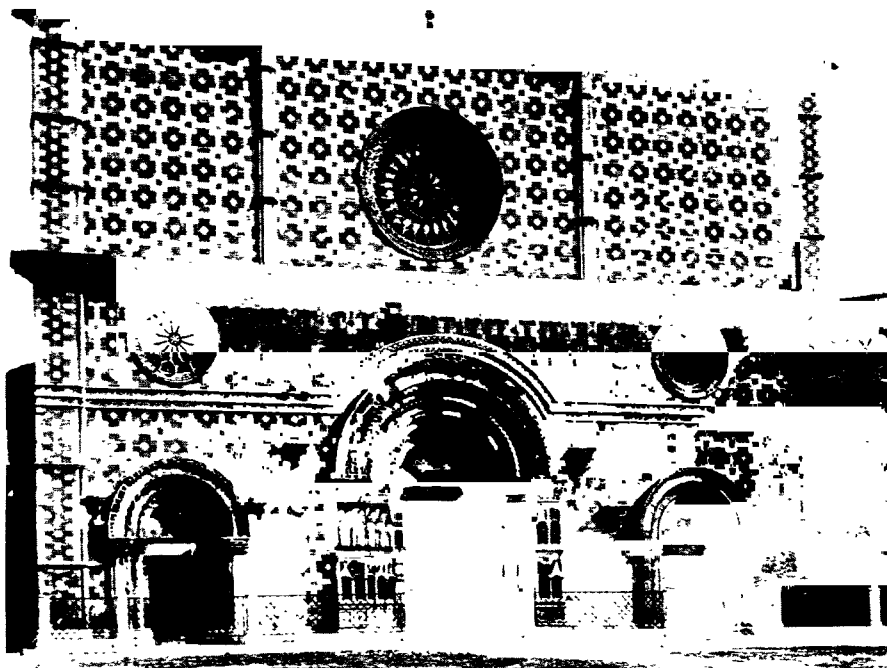


THE SIMONOPETRA MONASTERY, MT. ATHOS. TOWER-LIKE STRUCTURES IN WHICH CONTRAST OF FENESTRATION AND BALCONIES WITH PLAIN TOWER SURFACES CONSTITUTE THE MAIN ATTRIBUTES



THE BASILICA OF S. IRENE, CONSTANTINOPLE, A.D. 740. TYPICAL BYZANTINE TREATMENT DERIVED FROM THE MOTHER CHURCH OF SANTA SOPHIA

Chapter 3
Romanesque and Early Mediæval

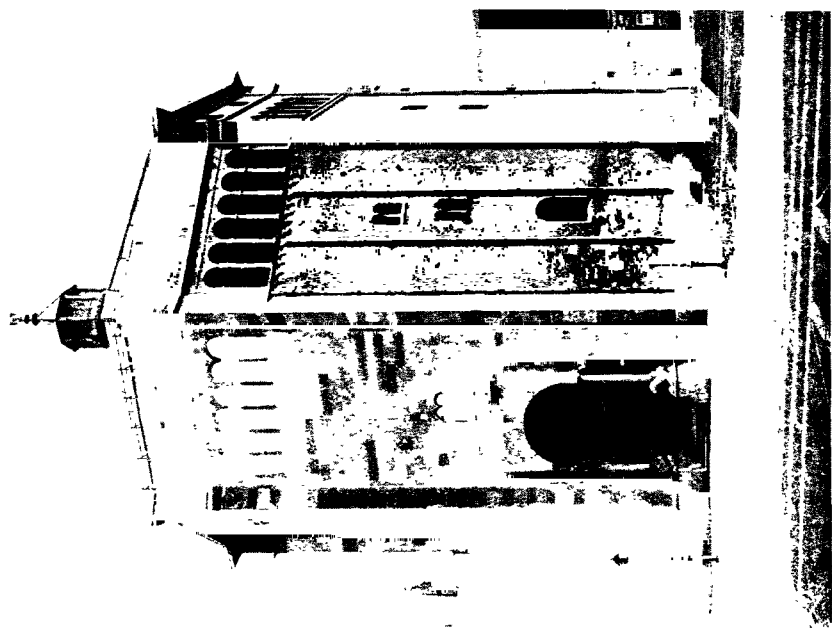


CHIESA DI S. MIRACOLI, AQUILA. WEST FRONT OF RECTANGULAR FORM
The chief interest is the grouping of the three doorways and the wheel windows.

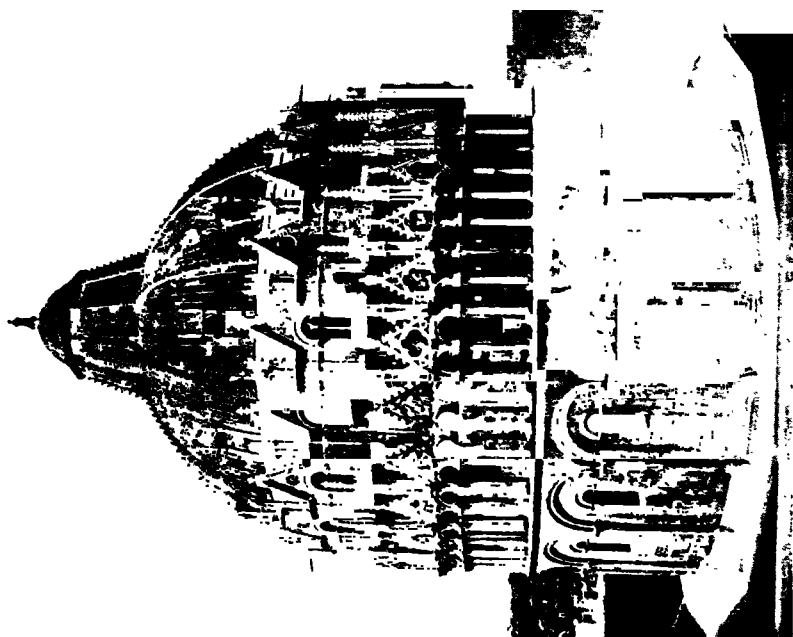


THE BASILICA OF S. AMBROGIO, MILAN, A.D. 1140. ONE OF THE MOST REMARKABLE BUILDINGS OF ITS PERIOD

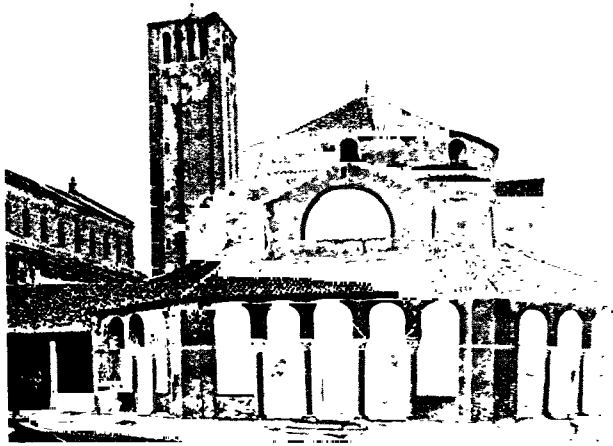
The long atrium in front is exceptional. The design as a whole expresses the grouping of arched openings of varying size.



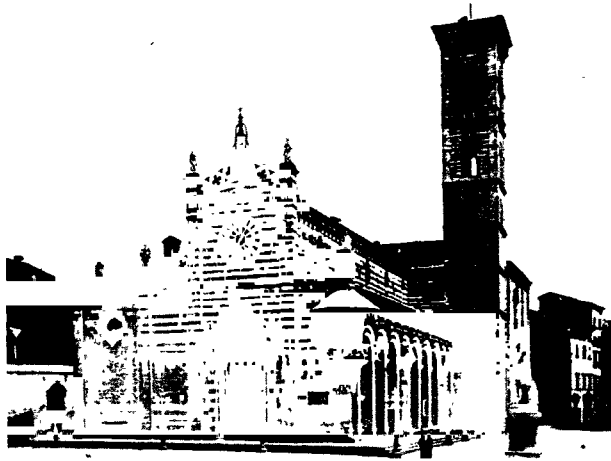
THE BAPTISTRY, CREMONA. OCTAGONAL SINGLE MASS OF TOWER TYPE



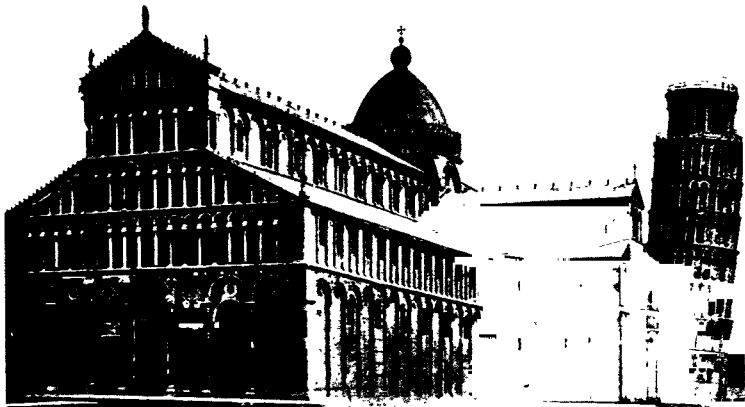
THE BAPTISTRY, PISA. A SINGLE MASS OF CIRCULAR FORM ENHANCED BY INTEREST OF STEPPED SILHOUETTE



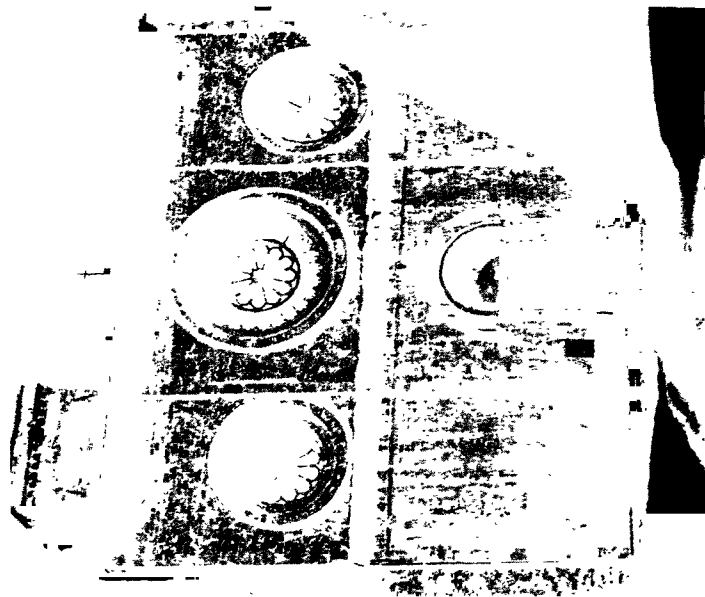
S. FOSCA, TORCELLO. EARLY CHRISTIAN DESIGN, REBUILT A.D. 1008
Exterior treatment expressing three influences, namely, Islamic, Carolingian and Byzantine.



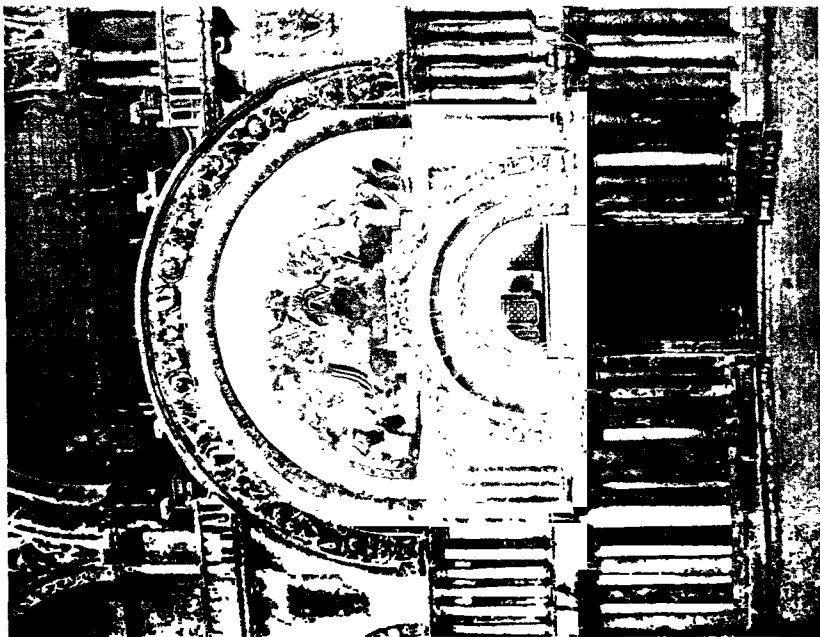
THE CATHEDRAL, PRATO. ROMANESQUE SYSTEM OF DESIGN TRANSPOSED TO FASHION OF
SIENESE SCHOOL. (By Giovanni Pisano.)



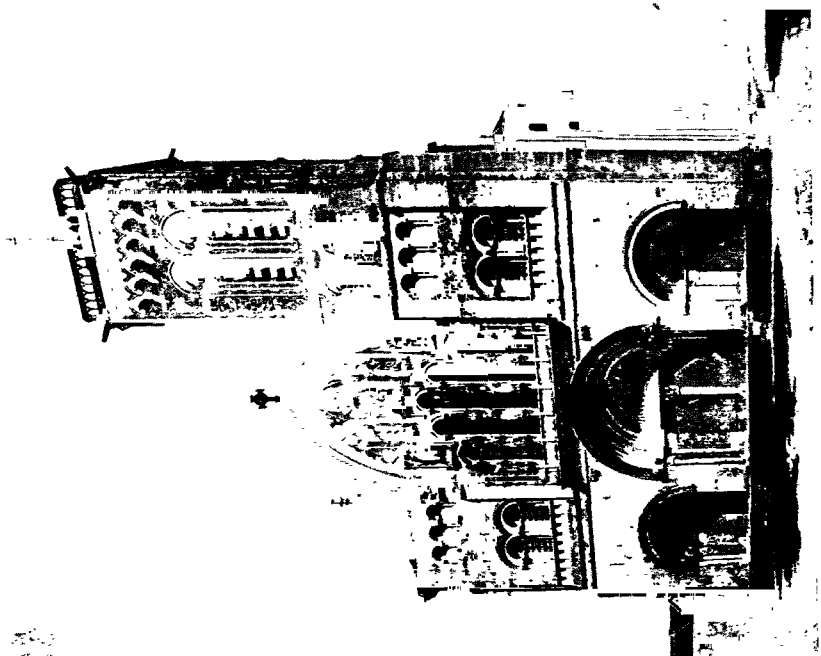
THE CATHEDRAL, PISA, A.D. 1006; AND LEANING TOWER, A.D. 1103.
THE CHIEF ROMANESQUE GROUP IN ITALY
End elevation expressing nave and aisles. Arcaded treatment in tiers for west end creating
a new theme.



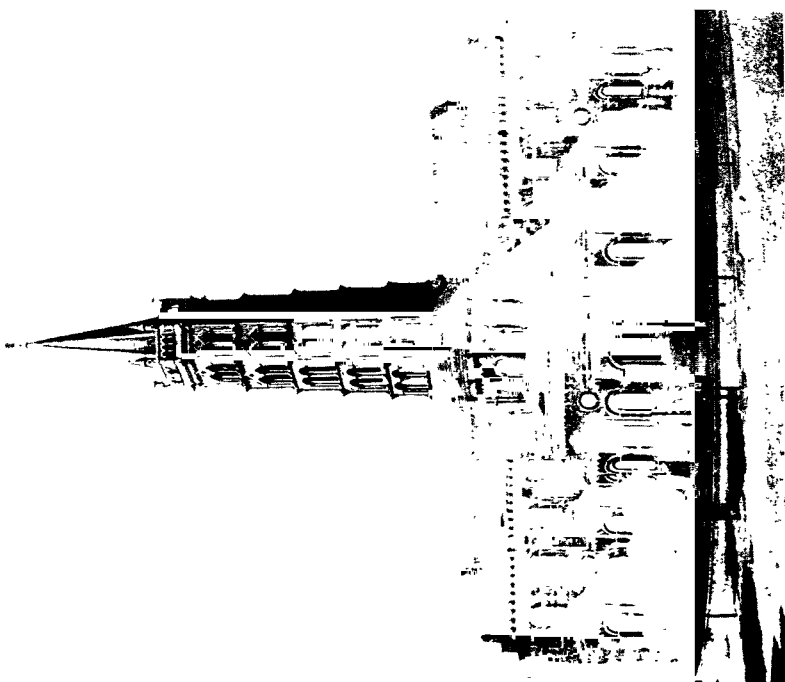
CHURCH OF S. PIETRO, ASSISI. GROUPING OF WHEEL
WINDOWS OF UNEQUAL SIZE AND STUDY OF AXIAL PLACING
CONTRASTED WITH RECTANGULAR MASS



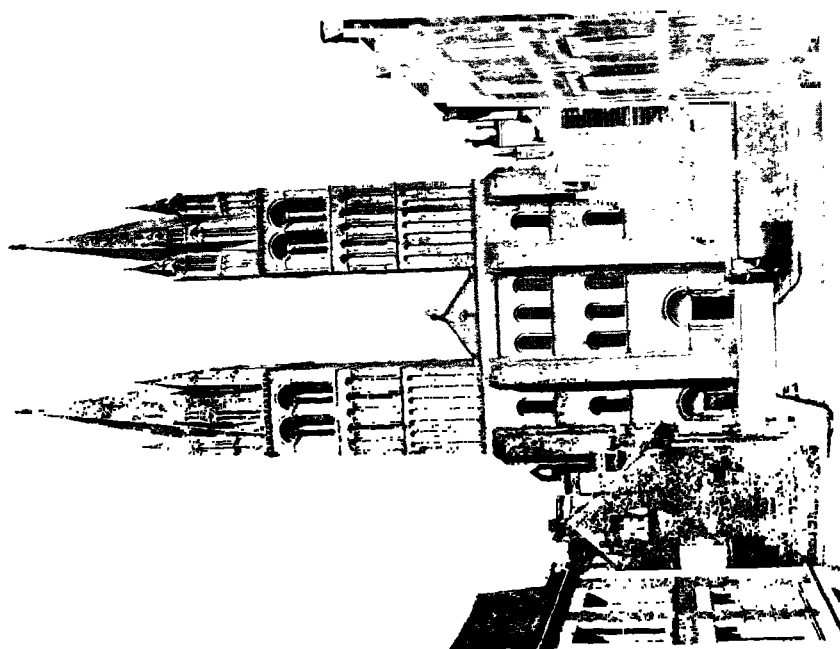
GREAT DOORWAY, ST. MARK'S, VENICE. COMMINGLING
OF ROMANESQUE AND BYZANTINE DETAILS



CHURCH OF THE MADELEINE, VEZELAY, A.D. 1100.
WEST FRONT
An early attempt to express nave and western towers.

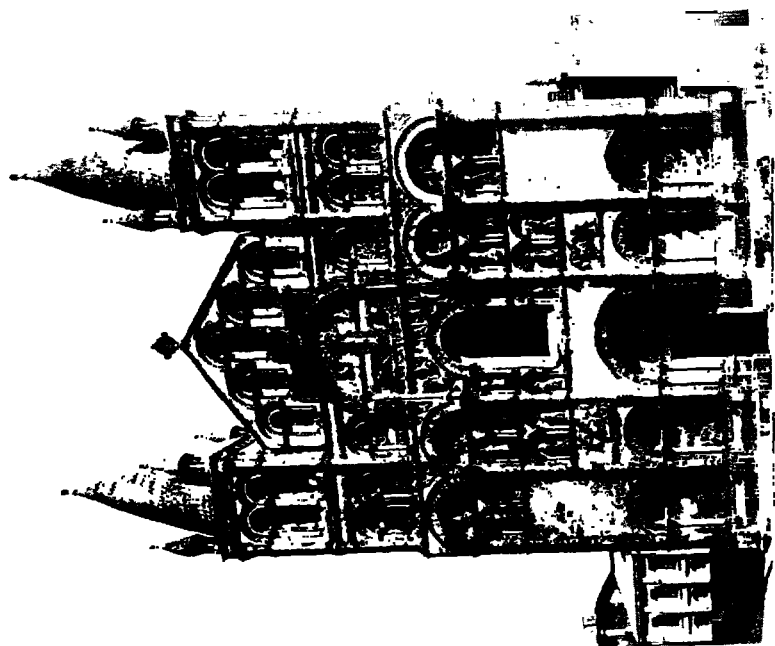


APSE OF THE CHURCH OF ST. SERNIN, TOULOUSE.
Fine example of tower design, tiers varying in scale as they ascend.



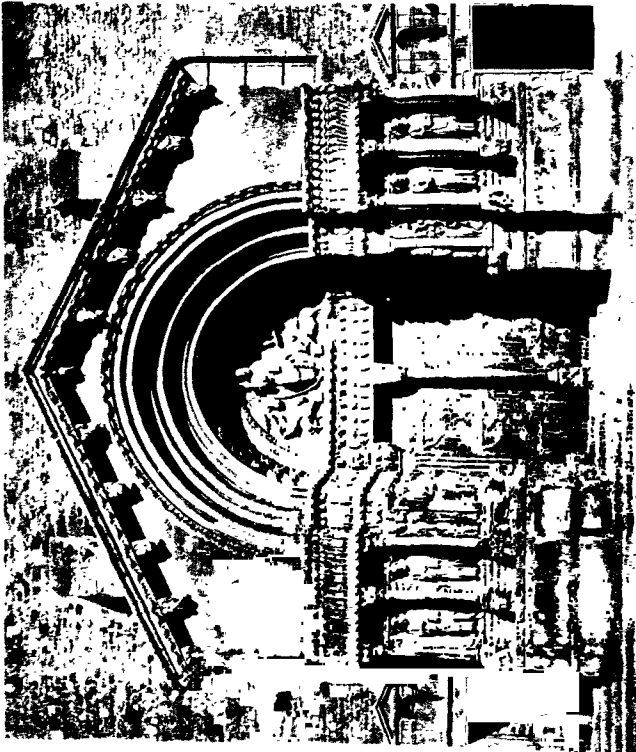
THE ABBAYE AUX HOMMES, CAEN, A.D. 1066-77. ROMANESQUE WEST FRONT

Spire added in the Thirteenth Century.



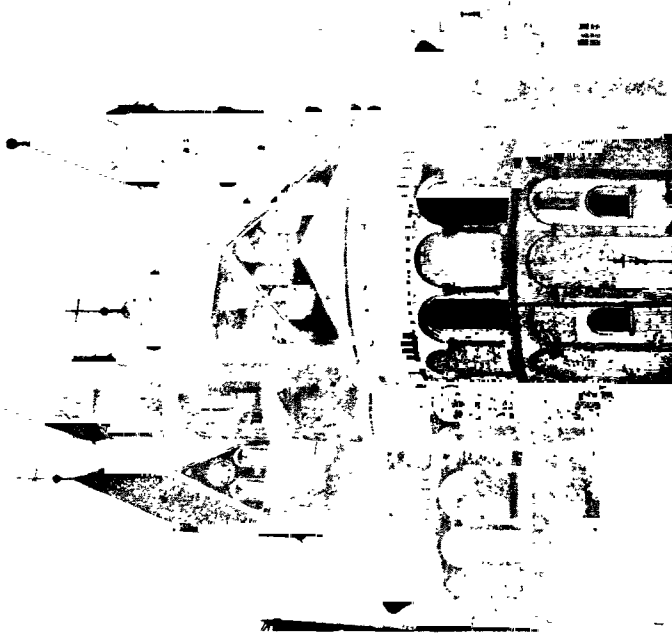
CATHEDRAL OF ST. PIERRE, ANGOULÊME, A.D. 1105-28. WEST FRONT

A French version of the tiered architecture of Italian Romanesque themes.

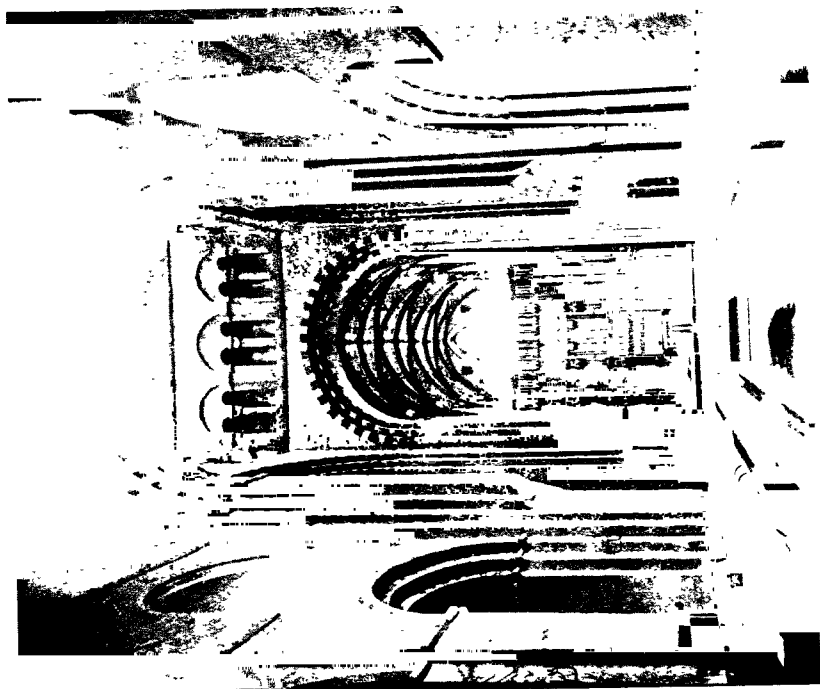


ST. TROPHIME, ARLES, TWELFTH CENTURY A.D. WEST DOOR

Unique composition of pediment and semicircular niche forming background for minor features and sculptural interest. This design not only gives importance to the twin doors, but actually provides the basis for the design of the great external porches of the Gothic cathedrals.



CHURCH OF THE APOSTLES, COLOGNE. CHURCH SHOWING INFLUENCE OF BYZANTINE PLAN
Pyramidal composition of masses.



CATHEDRAL, ST. ALBANS. NORMAN
BAYS OF THE NAVE NEXT TO THE CROSSING

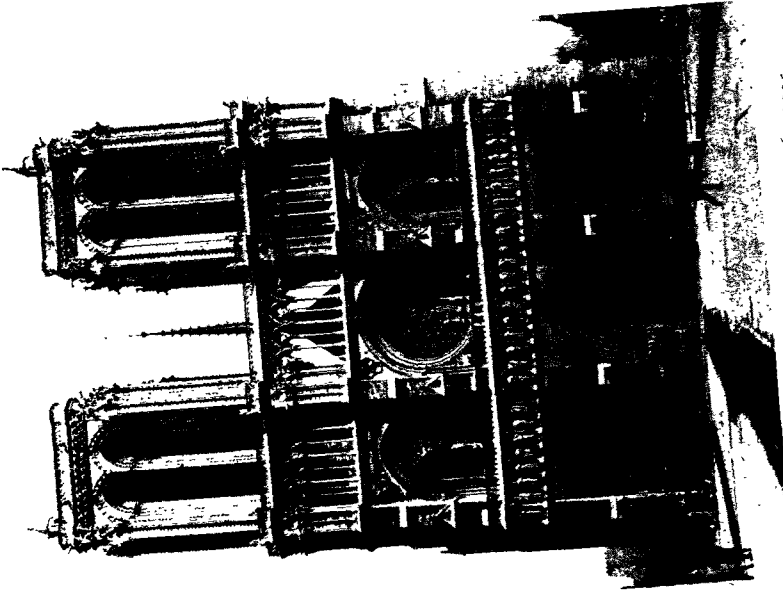
This early example of Norman architecture relies for effect on the recessed orders of the compounds and arches. It is a direct statement of structure in the simplest terms.



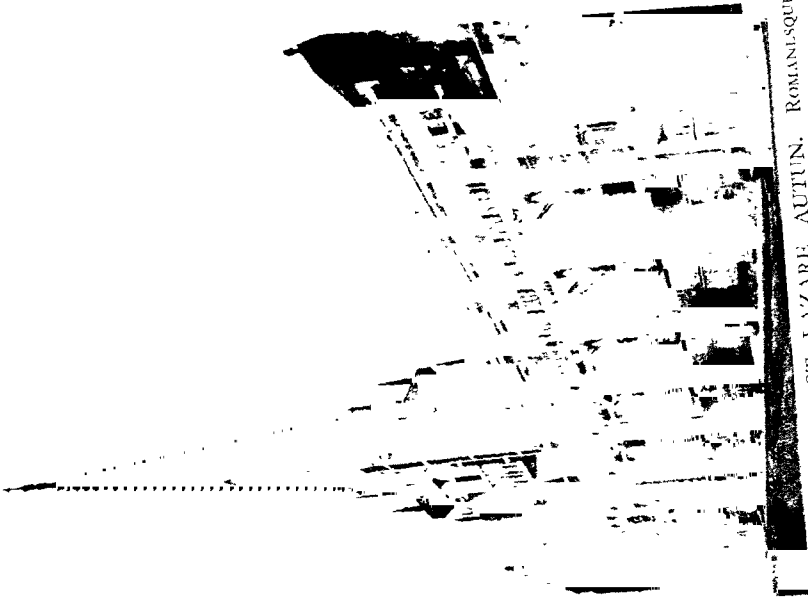
SOMPTING CHURCH, SUSSEX. SAXON

An early example of a tower and spire ingeniously contrived.

Chapter 3

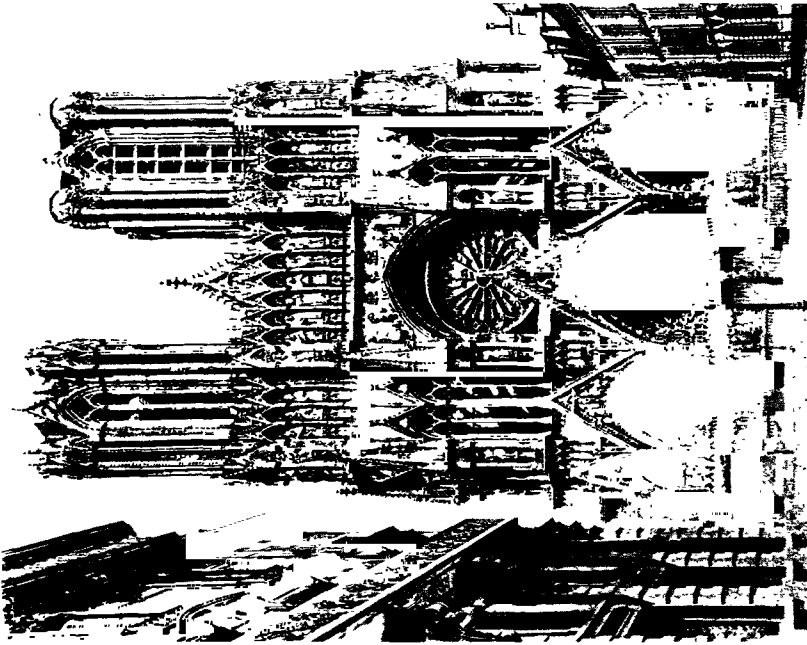


NOTRE-DAME, PARIS, A.D. 1163-1235
West front has practically equal towers. The horizontal bandings of niches and arcades form the main divisions in the arrangement; at the same time the gable of the nave is masked above the rose window.



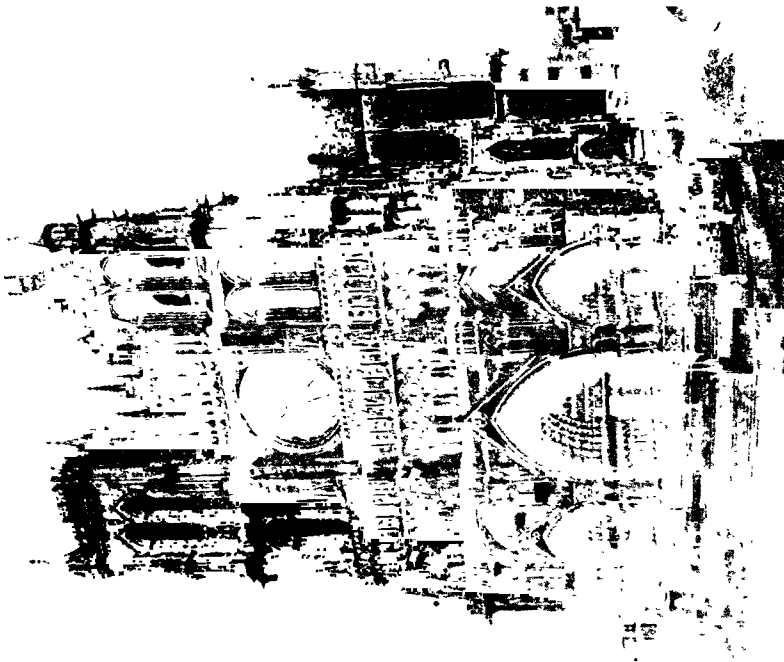
CATHEDRAL OF ST. LAZARE, AUTUN. ROMANESQUE
PLAN AND STRUCTURE, A.D. 1090-1132

Gothic additions to a Romanesque building. The central spire forms a dominant feature when viewed from the side of the building.



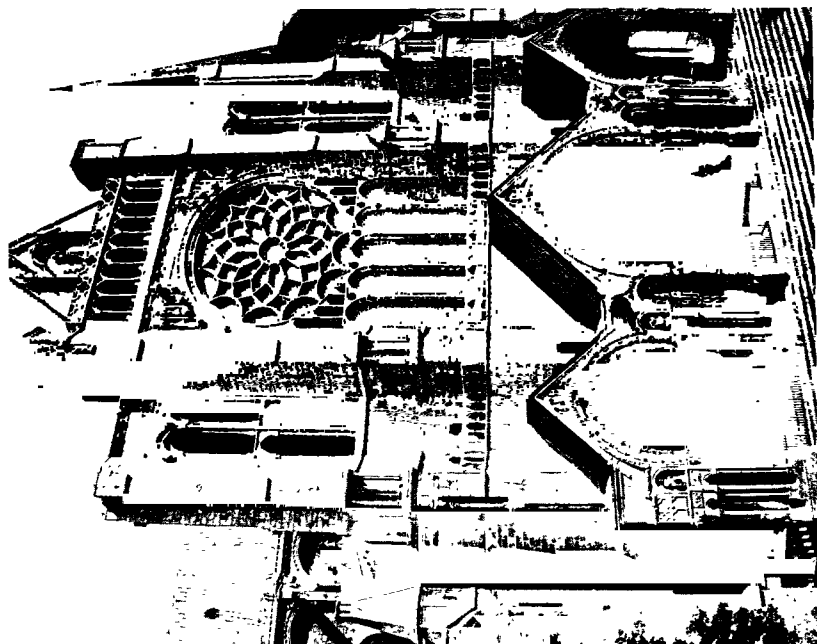
RHEIMS CATHEDRAL, A.D. 1212-41. WEST FRONT

This façade consists of three parts, namely, the twin towers and the central mass and rose window. The unifying element is to be found in the triple recessed doorways and the horizontal band of niches at gable height.



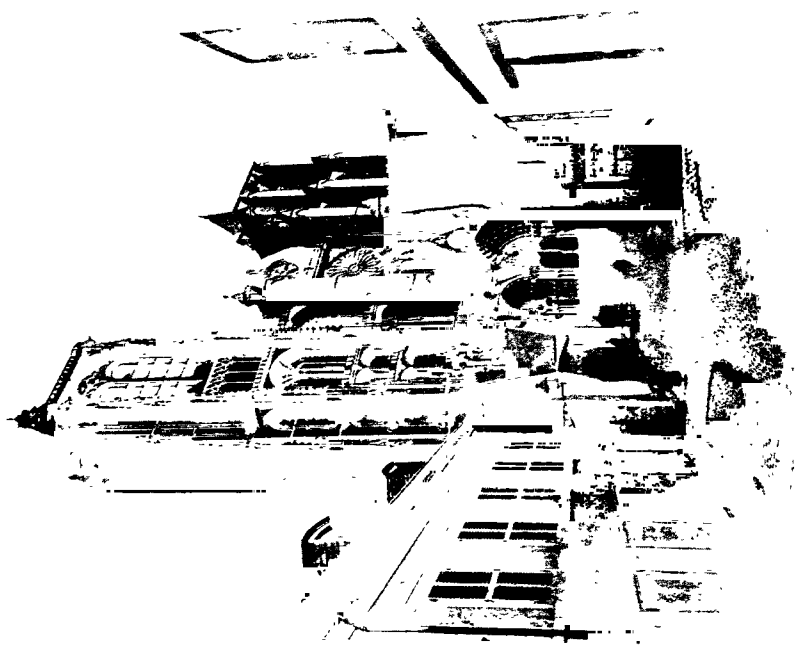
THE CATHEDRAL, AMIENS, A.D. 1220-1288. (ROBERT DE LUZARCHE, *Architect*.)

The west front presents one of the noblest Gothic designs. This three-part composition has its focal point in the central doorway and the rose window over. Dramatic silhouette is afforded by the difference in height of the towers.



CHARTRES CATHEDRAL, A.D. 1194-1260. TRANSEPT
ENTRANCE

Three-part massing, the rose window framed within a stepped pattern of windows and arcading.

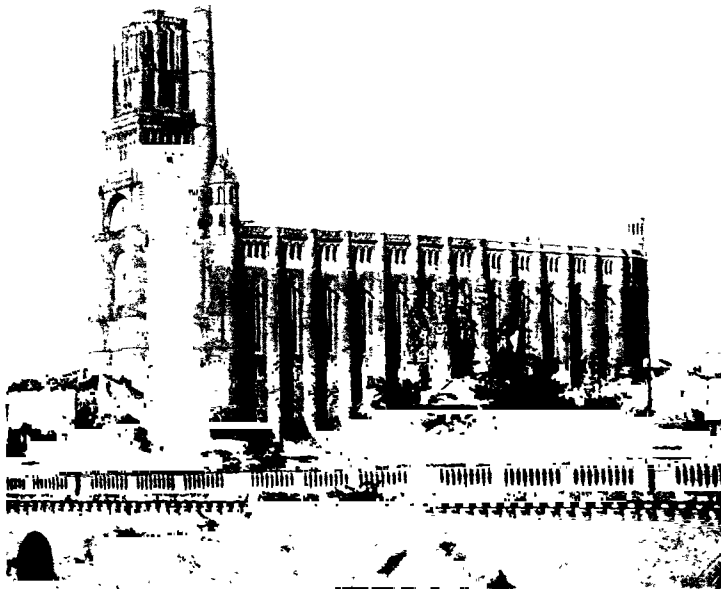


THE CATHEDRAL, BOURGES, A.D. 1190-1273. A RARE
EXAMPLE WITHOUT TRANSEPTS

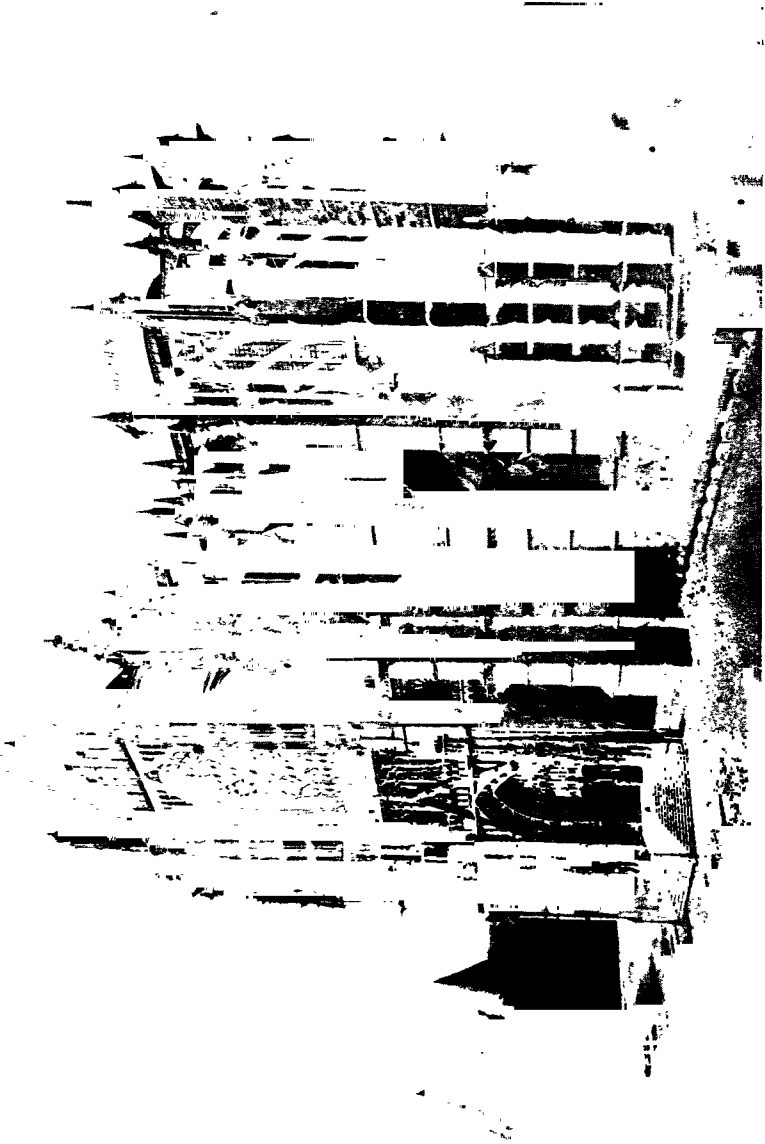
The west front has towers of unequal height dominating the picturesque roofs of the city.



GENERAL VIEW, PORTE DE L'AUDE, CARCASSONNE
AN EXAMPLE OF MILITARY CONSTRUCTION

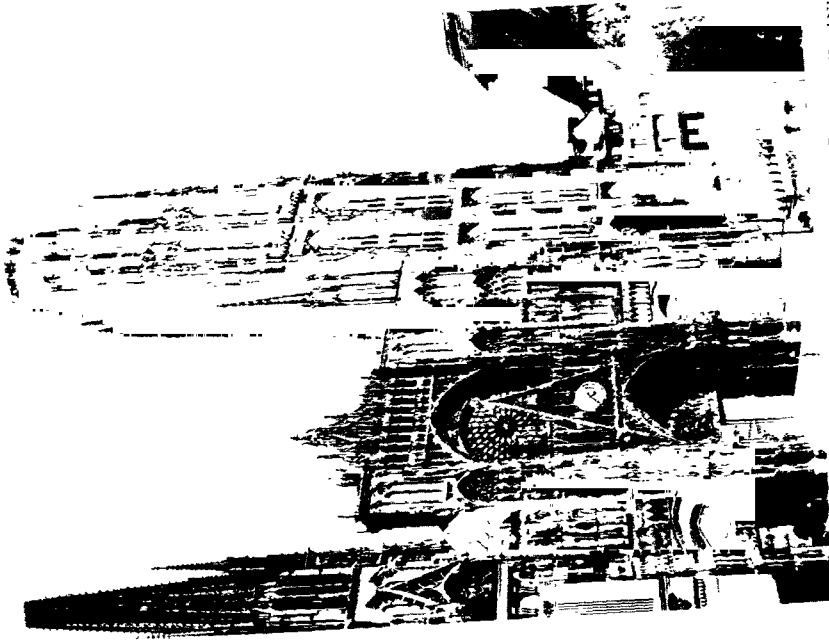


CATHEDRAL OF SAINTE CÉCILE, ALBI, A.D. 1232-1572. SOUTH SIDE
Fortress-type church. Two-part composition of vertical and horizontal masses.
Repetition of semicircular piers as external buttresses produces unity in the design.



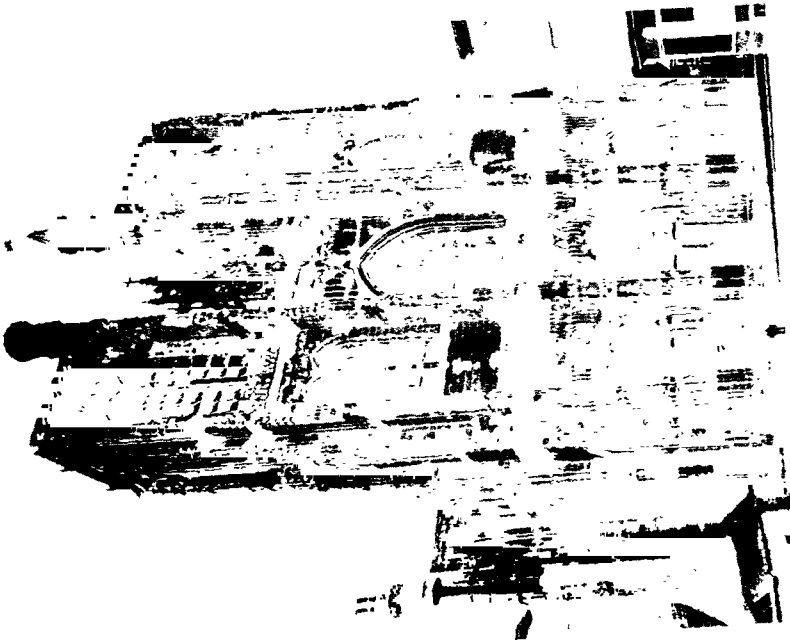
BEAUVAIS CATHEDRAL, A.D. 1225-1568. VIEW FROM SOUTH-EAST. CHOIR RECONSTRUCTED A.D. 1337-47
An example of Medieval construction on the giant scale. Choir and transepts only completed. The outward expression of the structure derives from the necessity to receive thrusts. The vertical treatment of double buttresses round the choir is echoed on the sides of the transepts.

Chapter 3



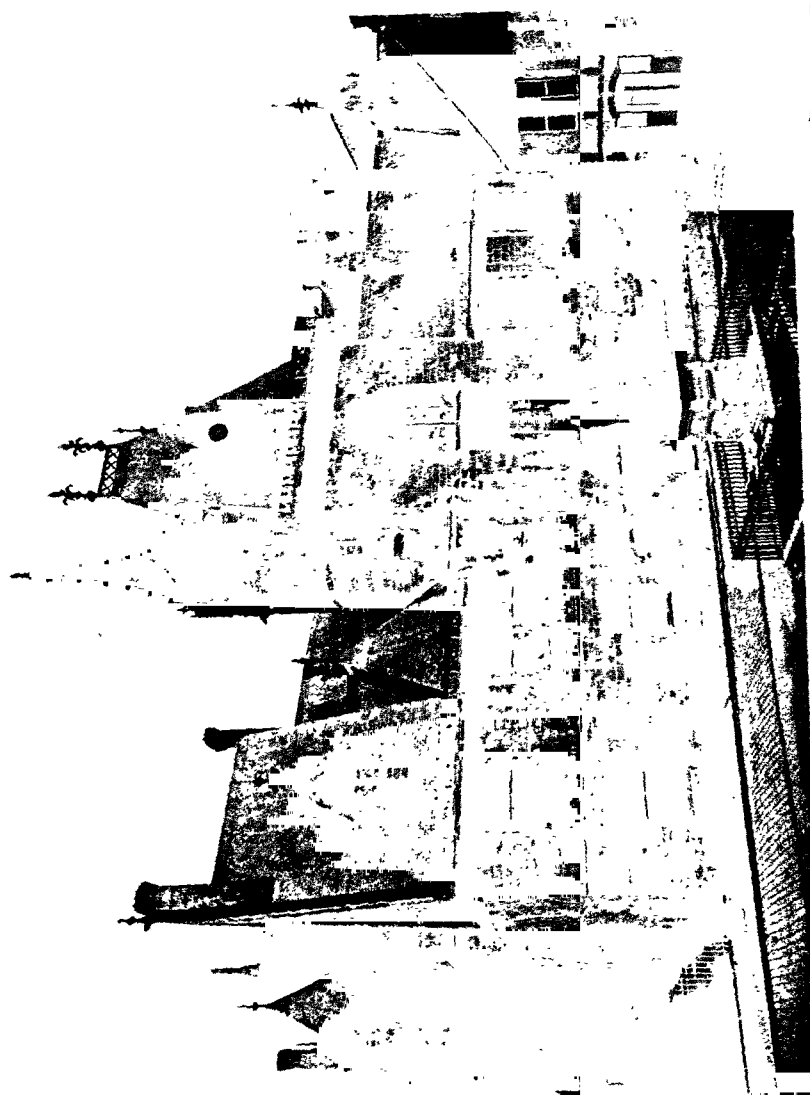
ROUEN CATHEDRAL. WEST FRONT. FIFTEENTH AND SIXTEENTH CENTURIES

Composition of three masses of dissimilar form. Not only does the southern tower dominate the scheme by its verticality, but it provides a contrast in silhouette.

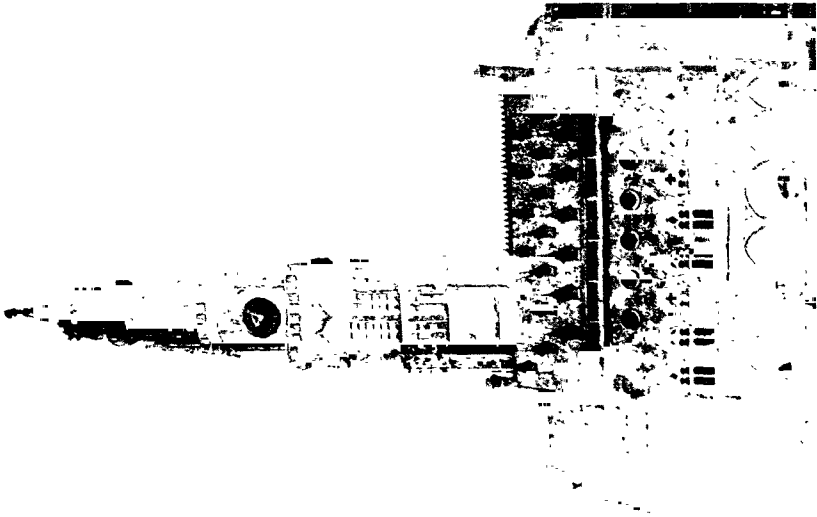


ABBEVILLE CATHEDRAL. WEST FRONT. FIFTEENTH AND SIXTEENTH CENTURIES

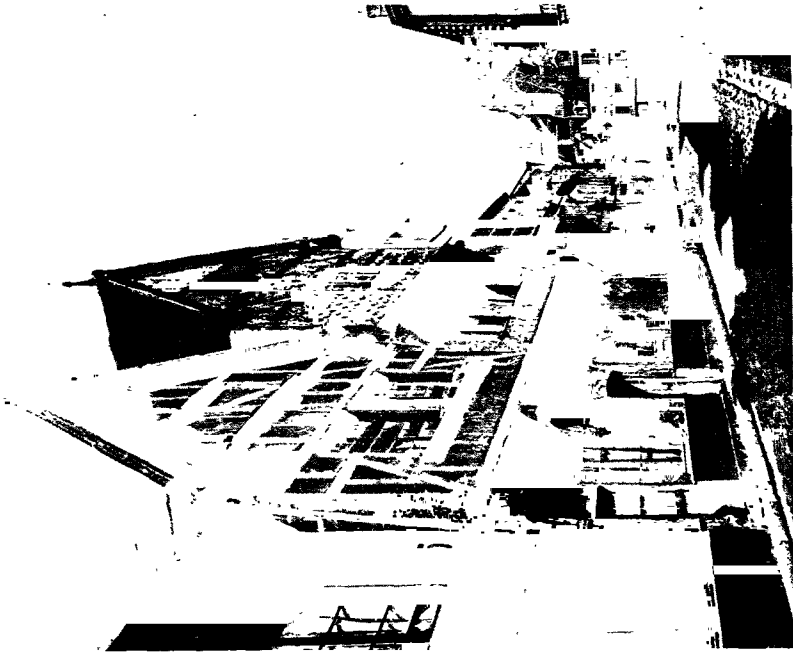
A composition of equal masses linked by a central gable expressing the nave. The towers are powerful accessories in the harmony.



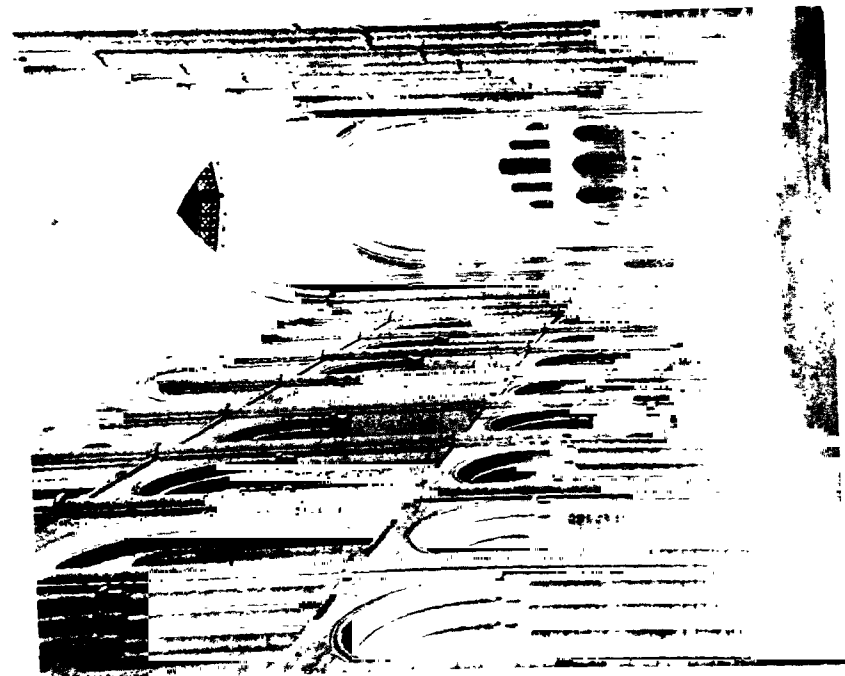
HOUSE OF JACQUES COEUR, BOURGES, A.D. 1443. DESIGN ACHIEVED BY INDEPENDENT ROOFING OF
VARIOUS PARTS. CONTRAST OF SILHOUETTE IS THE MAIN THEME



HOTEL DE VILLE, ARRAS, FIFTEENTH CENTURY.
A COMPOSITION OF TWO MASSES, THE VERTICAL
ELEMENT BEING DOMINANT

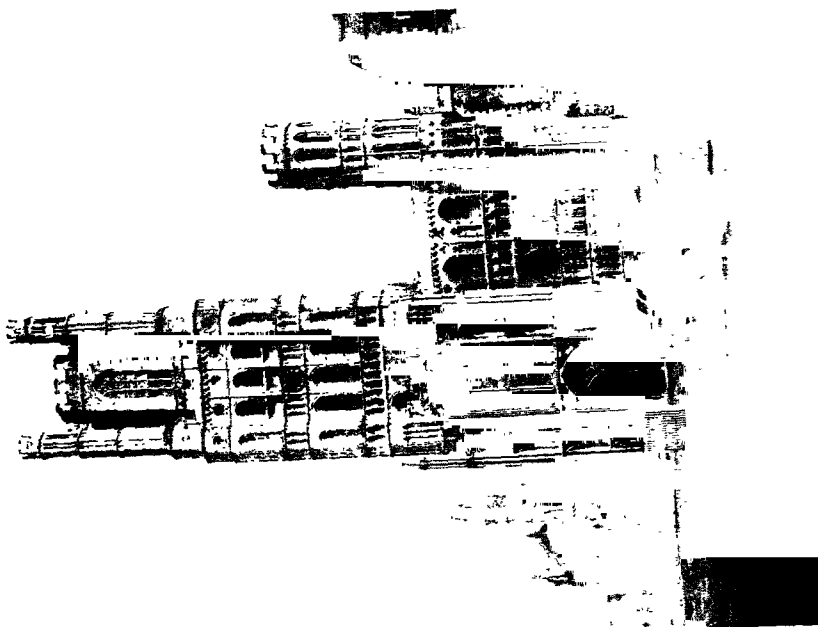


OLD HOUSES, RUE DE LA MANUFACTURE, BEAUVAIS.
TYPICAL HALF-TIMBERED CONSTRUCTION OF OVERHUNG TYPE
ARISING FROM USE OF SHORT-LENGTH TIMBERS



ELY CATHEDRAL, NORMAN NAVE, FOURTEENTH-CENTURY LANTERN AT CROSSING

Studied repetition of recessed arches which are in sympathetic sequence vertically and horizontally.



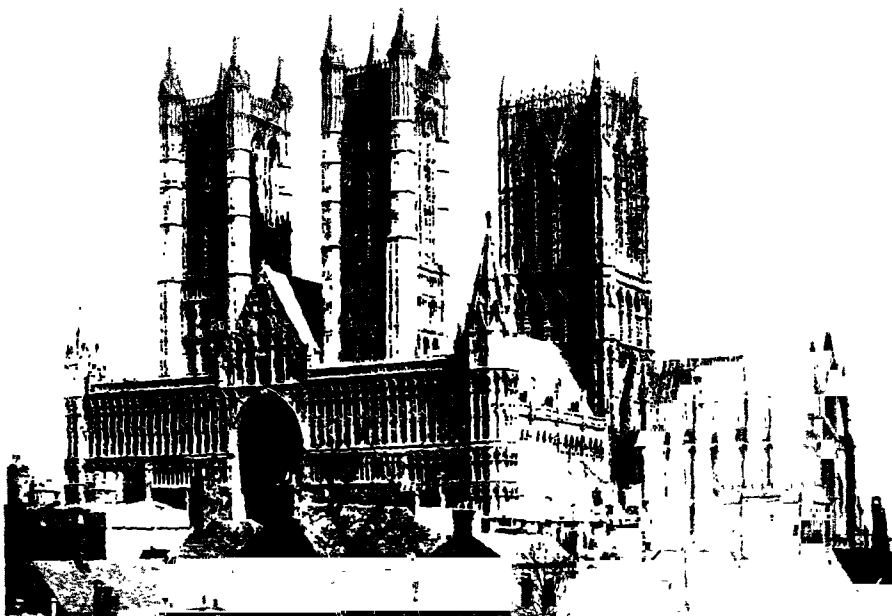
ELY CATHEDRAL, WEST FRONT, CENTRAL WESTERN TOWER NORMAN, UPPER PORTION OF FOURTEENTH-CENTURY DATE

Originally designed as a three-part composition, the northern portion has never been rebuilt. This front demonstrates the value of sympathy of silhouette between main and lesser features.



LINCOLN CATHEDRAL. EARLY ENGLISH NAVE

Studied internal perspective. Vaulting of nave and aisles complementary.



LINCOLN CATHEDRAL. EARLY ENGLISH, DECORATED TOWERS ADDED LATER

Composition of three main masses of equal height but dissimilar in bulk. The arcuated western frontispiece extending across nave and aisles, although novel, is unsatisfactory for the reason that it cuts the bases of the western towers.

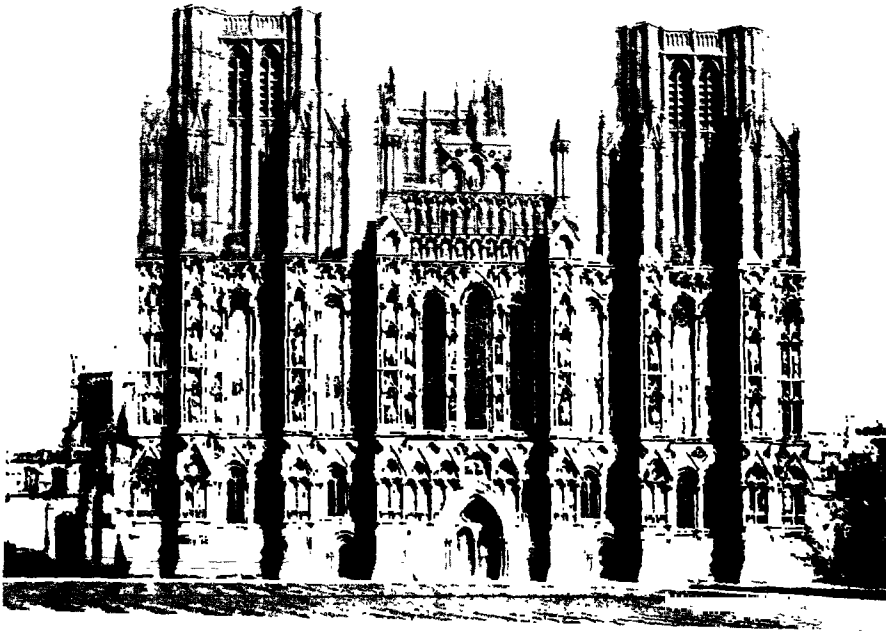


ST. CROSS, WINCHESTER. CRUCIFORM PLAN WITH CENTRAL TOWER DOMINATING



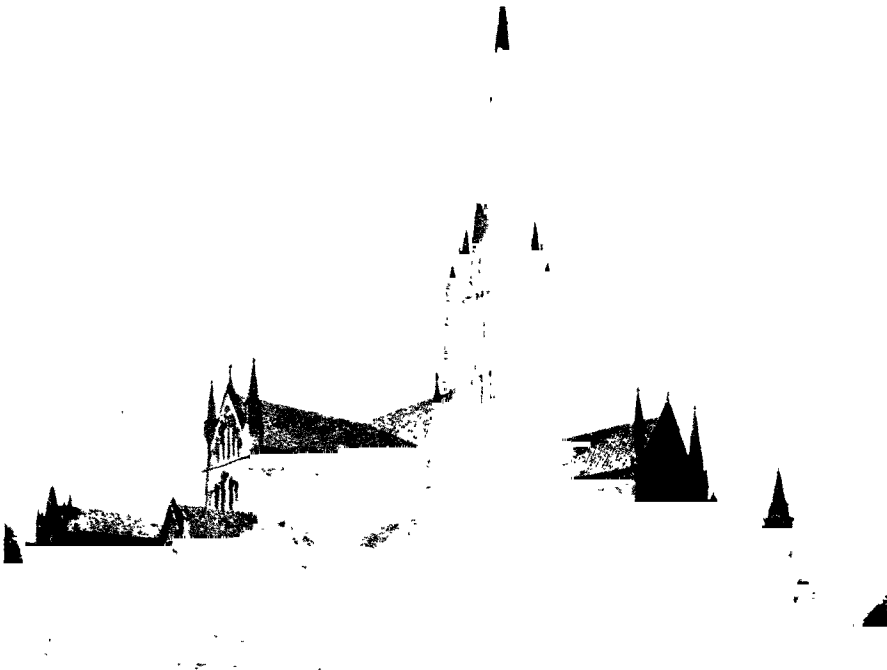
DURHAM CATHEDRAL FROM NORTH-WEST. THREE MAIN MASSES EVOLVING FROM PLAN

The dominating central mass unifies the whole composition, including subordinate features.



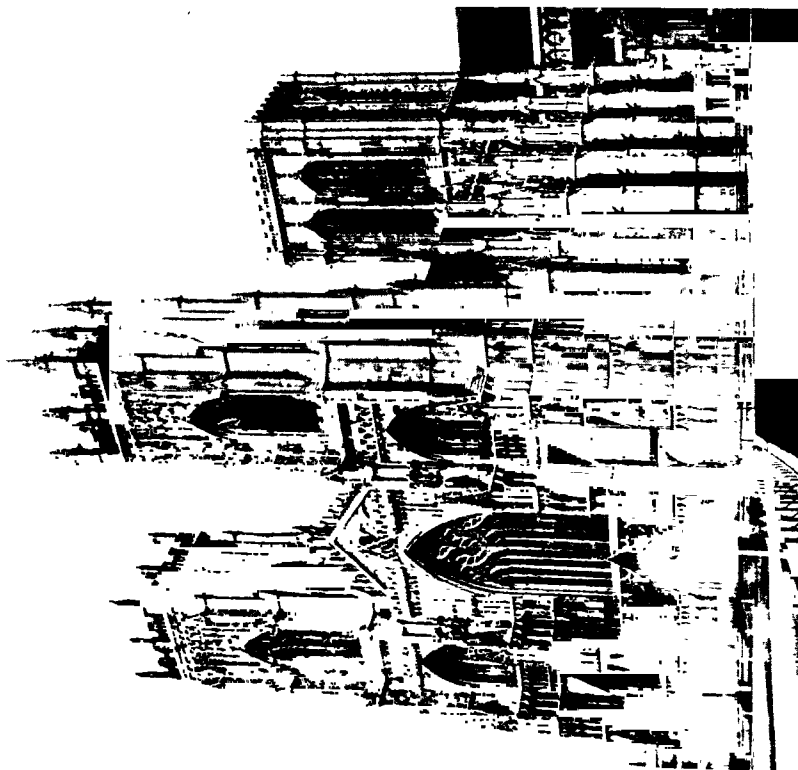
WELLS CATHEDRAL. WEST FRONT, EARLY ENGLISH

Three-part composition, namely, twin towers with lower centre and stepped gable, horizontal subdividing binding vertical features.



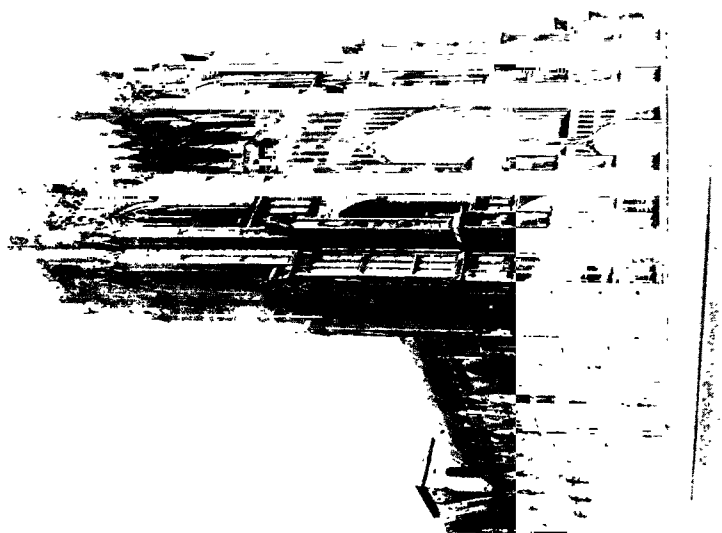
SALISBURY CATHEDRAL. EARLY ENGLISH, SPIRE OF DECORATED PERIOD

Pyramidal composition in perspective. Spire marking central crossing.



YORK MINSTER. WEST FRONT

A composition of three main vertical masses linked by horizontal lines.



BEVERLEY MINSTER. WEST FRONT

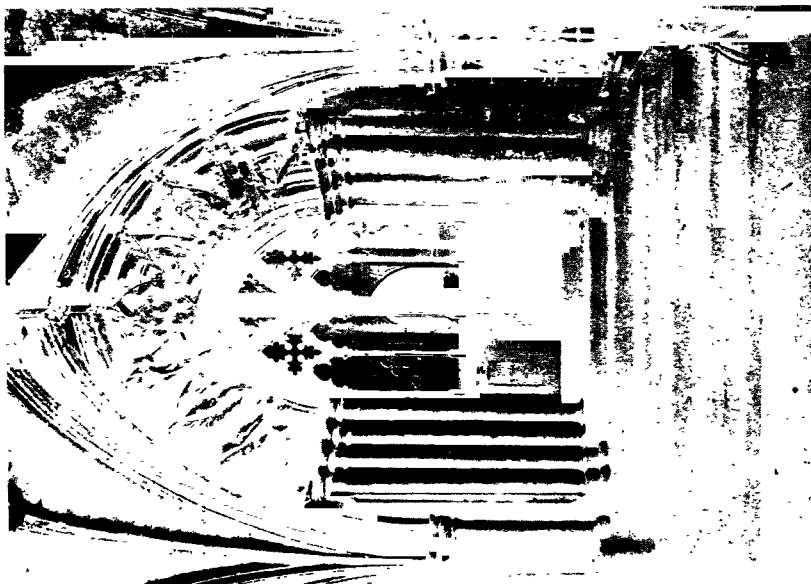
Identical towers linked by gable formation and great west window.



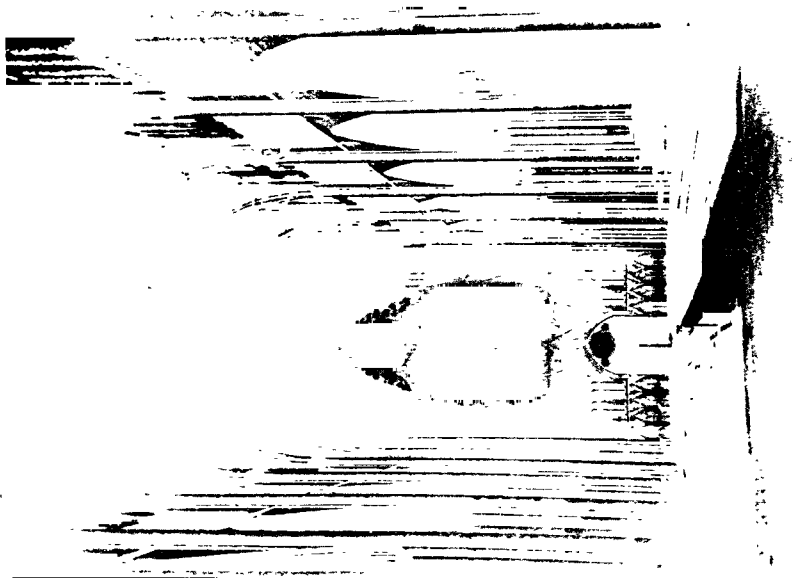
SOUTHWELL CATHEDRAL. VIEW OF CHOIR
Repetition of compounds and vaults of sympathetic form.



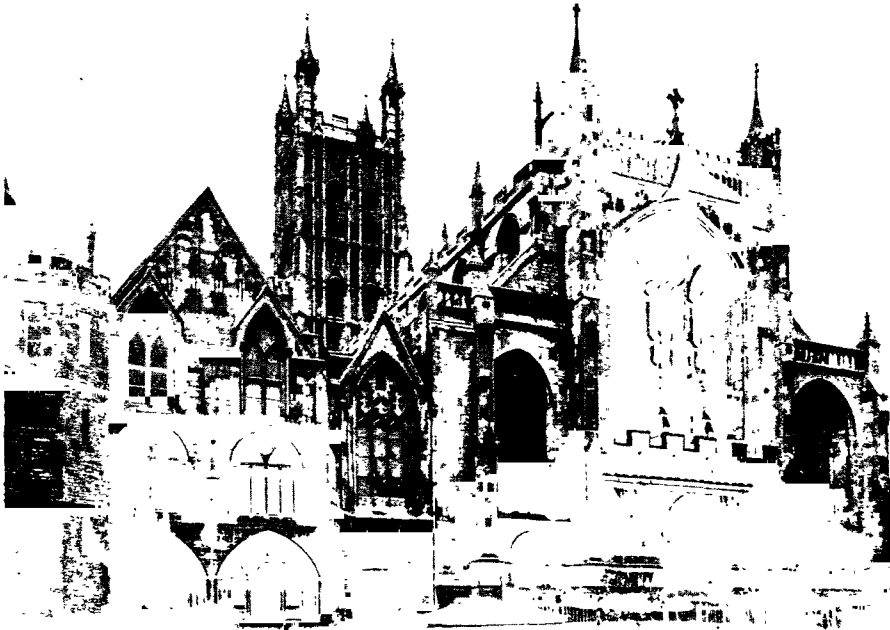
ELY CATHEDRAL FROM SOUTH-WEST. CONTRASTING SILHOUETTES OF TOWERS
ERECTED AT DIFFRENT PERIODS



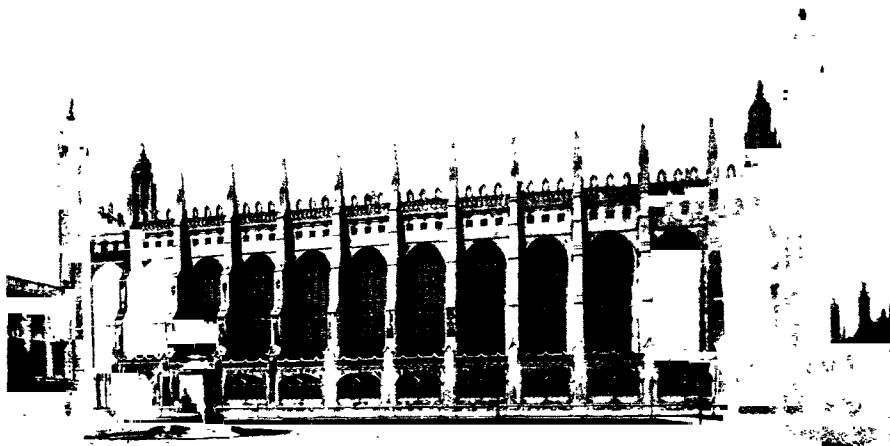
NORWICH CATHEDRAL. PRIOR'S DOORWAY
Niche form of entrance, complementary vaulting system
with radiating canopies and sculpture.



YORK MINSTER. THE NAVE, LOOKING WEST
Internal volume determined by scale of compounds and
vaulting span.

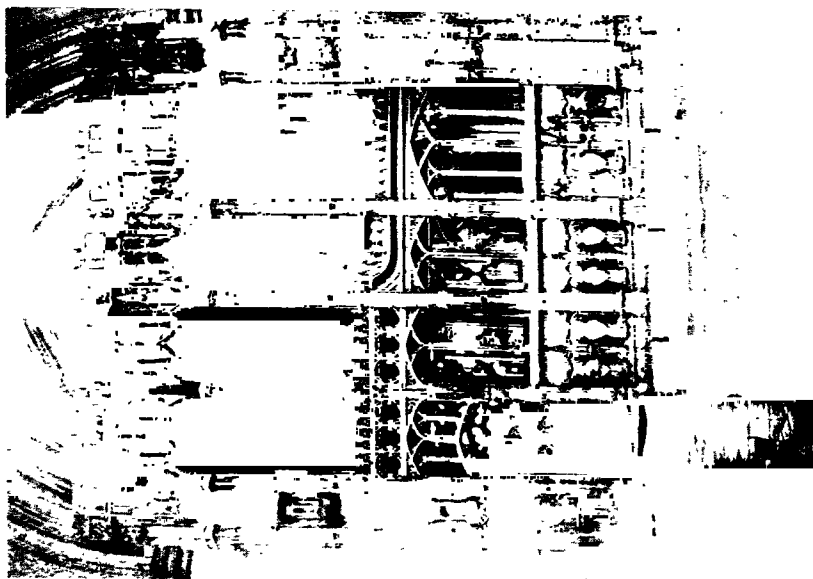


GLOUCESTER CATHEDRAL. THE WEST FRONT
Horizontal and vertical elements framing structural features.

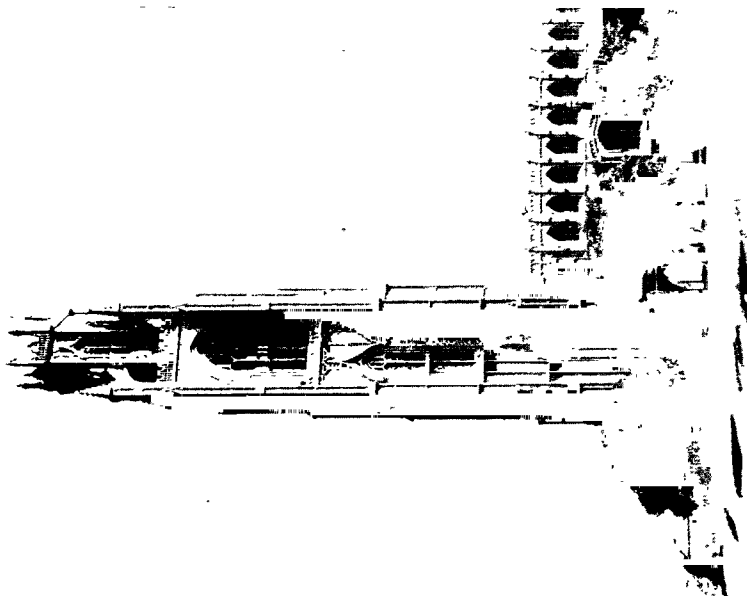


KING'S COLLEGE CHAPEL, CAMBRIDGE. STUDIED DESIGN EVOLVED FROM REPETITION
OF ONE BAY

Line of chapels between buttresses at base contrasted with band of masonry and square ventilation openings over large windows. Large fenestration displaying stained glass.

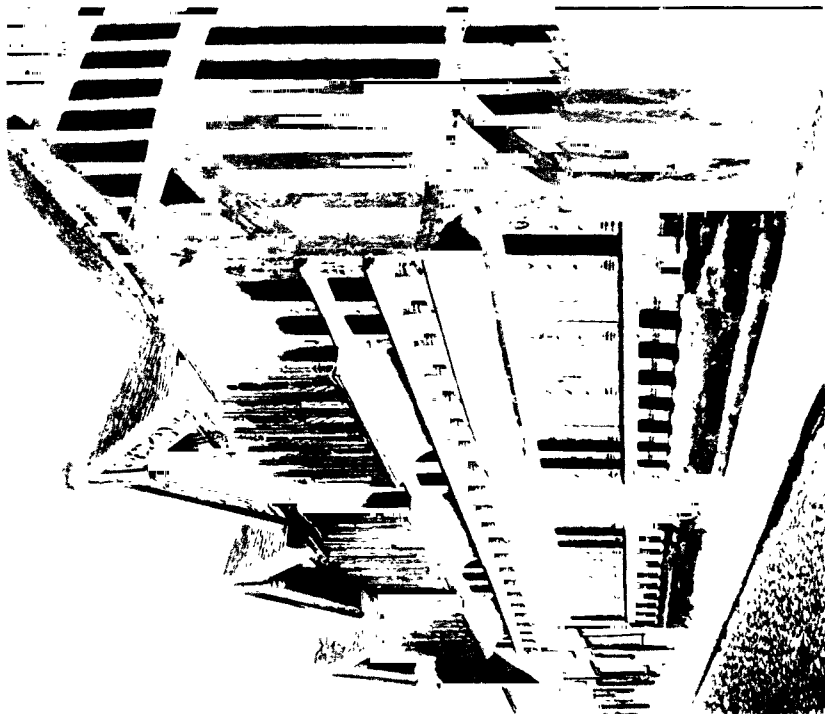


TEWKESBURY ABBEY. WARWICK CHAPEL
Free canopy and tabernacle design in compartments.



ST. BOTOLPH'S, BOSTON, LINCOLN. TOWER OF PARISH
CHURCH

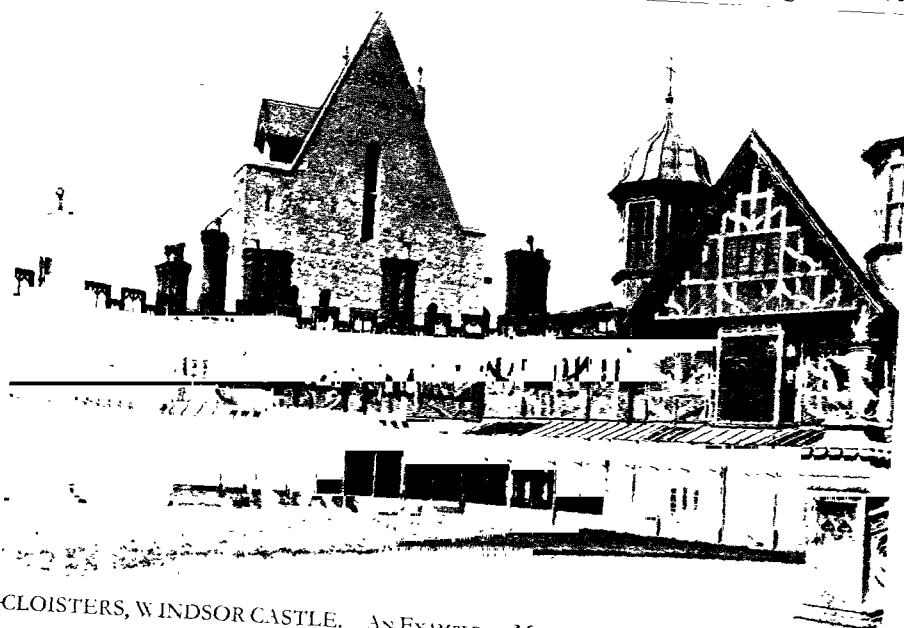
Strong vertical lines emphasizing tiered fenestration. Note the lantern set back from the west side of tower.



WHITEFRIARS HOSPITAL, COVENTRY. FIFTEENTH CENTURY
Timber construction expressed horizontally in the main lines and vertically in subordinate parts of the structure.



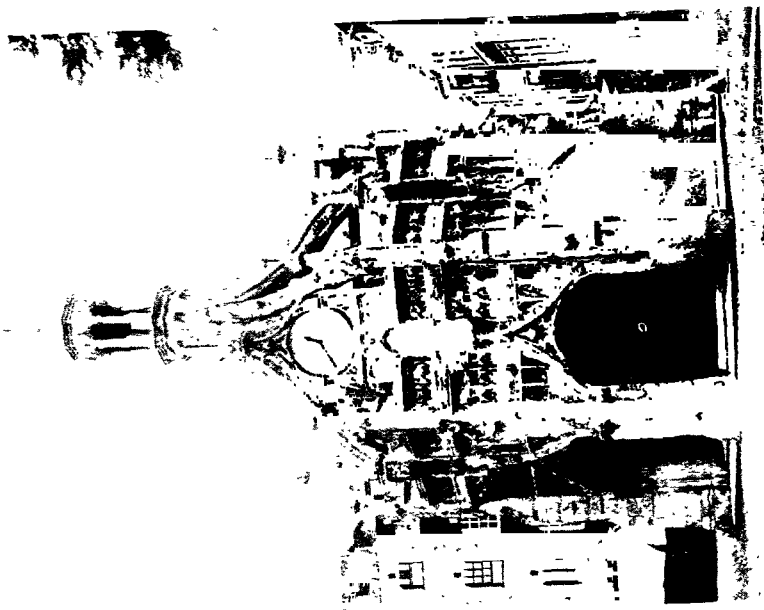
THE GEORGE INN, GLASTONBURY. FIFTEENTH CENTURY
Masonry construction sympathetic to contemporary timber structures.



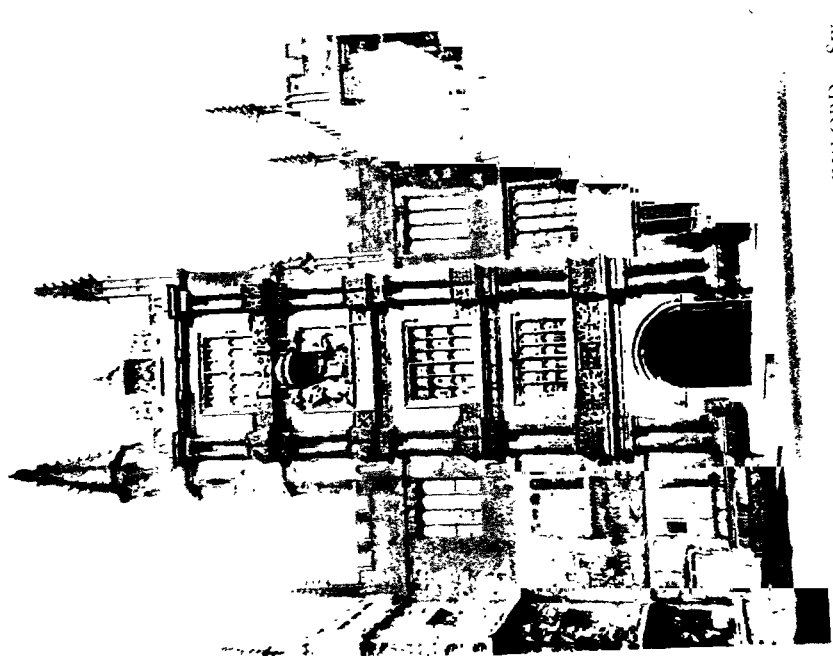
CLOISTERS, WINDSOR CASTLE. AN EXAMPLE OF MONASTIC ARCHITECTURE IN CRESCENT FORM



GLAMIS CASTLE, FORFARSHIRE, SCOTLAND. CENTRAL PORTION MEDIAEVAL
FORTRESS STRUCTURE WITH STRONG SILHOUETTE OF TURRETS ACCENTUATING TOWERING
MASSES
The wings are later additions.

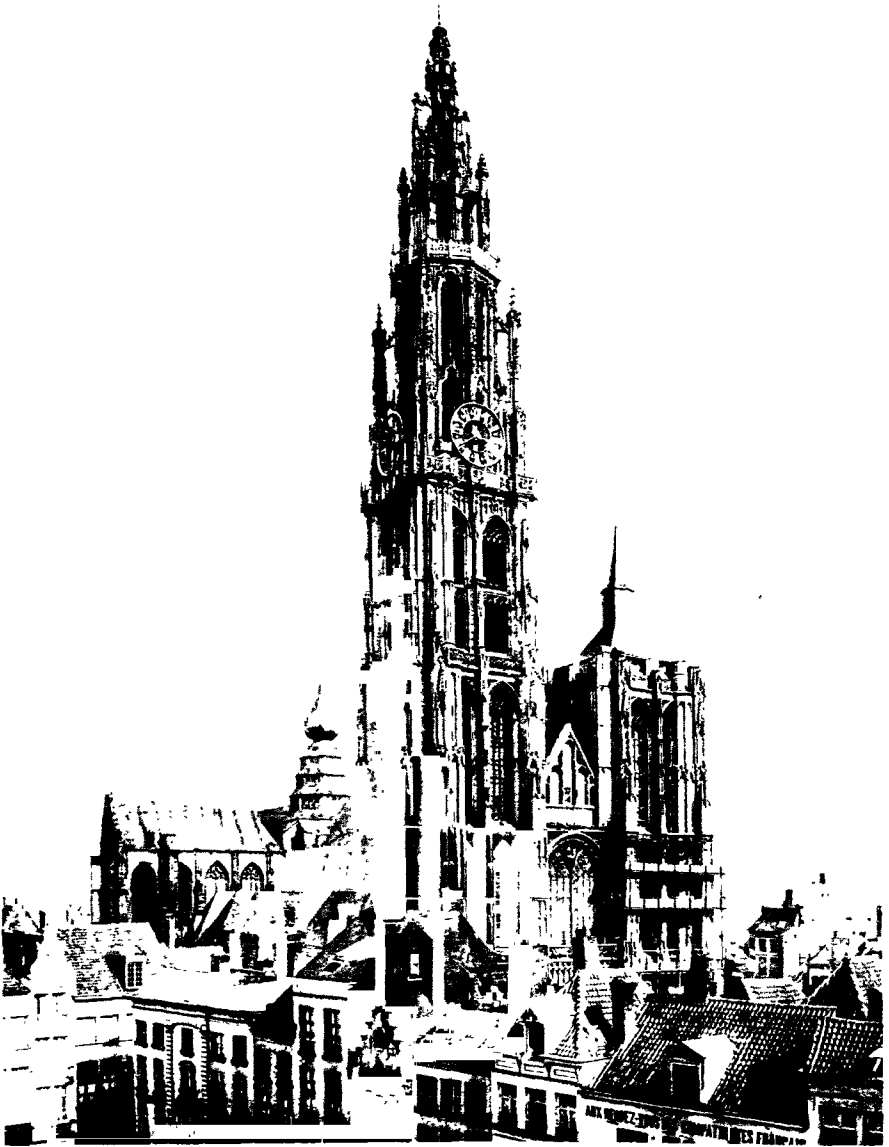


THE MARKET CROSS, CHICHESTER. A COMPOSITION OF SINGLE MASS WITH PYRAMIDAL SILHOUETTE DEVELOPED FROM PLAN



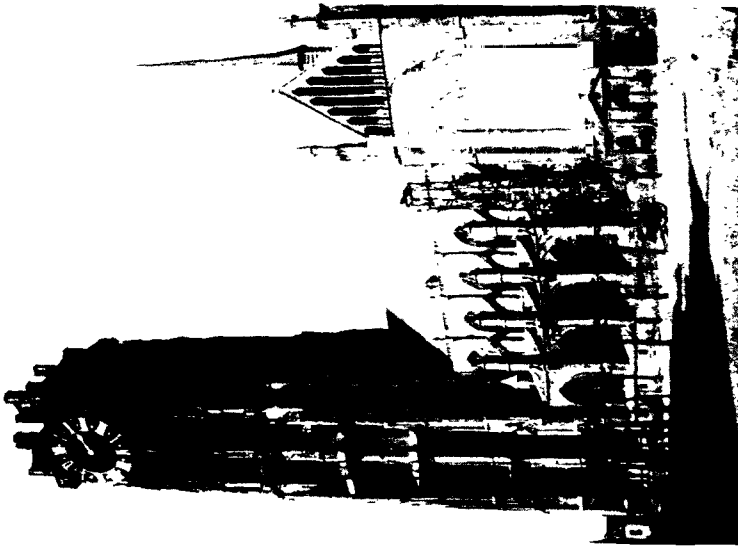
TOWER OF THE BODLEIAN LIBRARY, OXFORD. SIXTEENTH-CENTURY ENGLISH RENAISSANCE

Application of five orders in tiers embellishing Gothic structure.



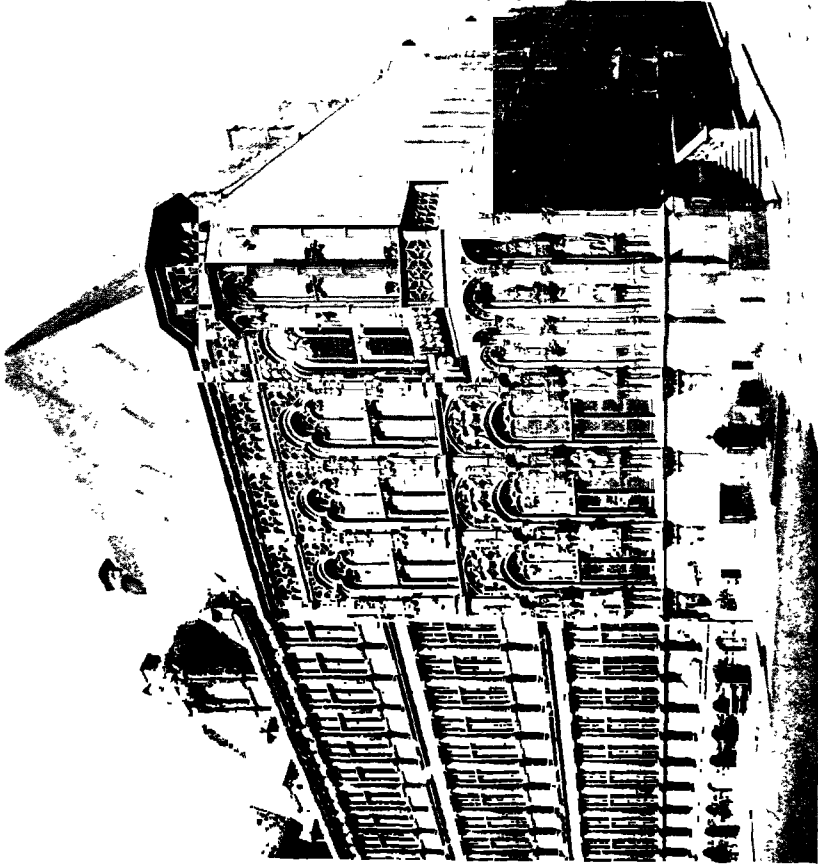
ANTWERP CATHEDRAL. WEST FRONT, A.D. 1422-1518

Design for twin towers which gains by completion of one only. The accidental contrast between the masses produces a dramatic effect. The vertical treatment of the buttresses and windows merges into the tapering lantern which terminates the composition.



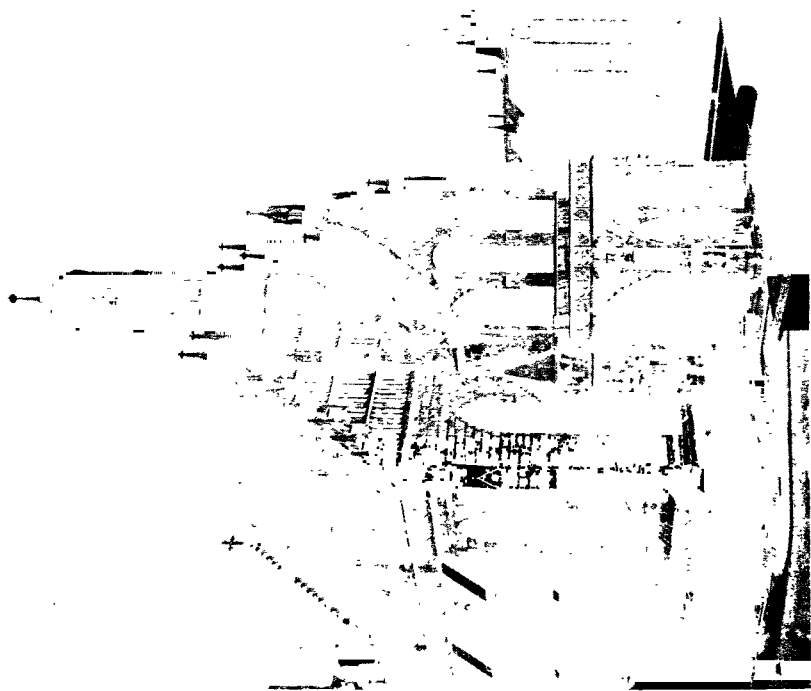
MALINES CATHEDRAL. TOWER DESIGN EMPHASIZ-
ING VERTICALITY OF DOMINANT MASS

This tower, inspired by that of Antwerp Cathedral, was intended to be finished in a similar manner.

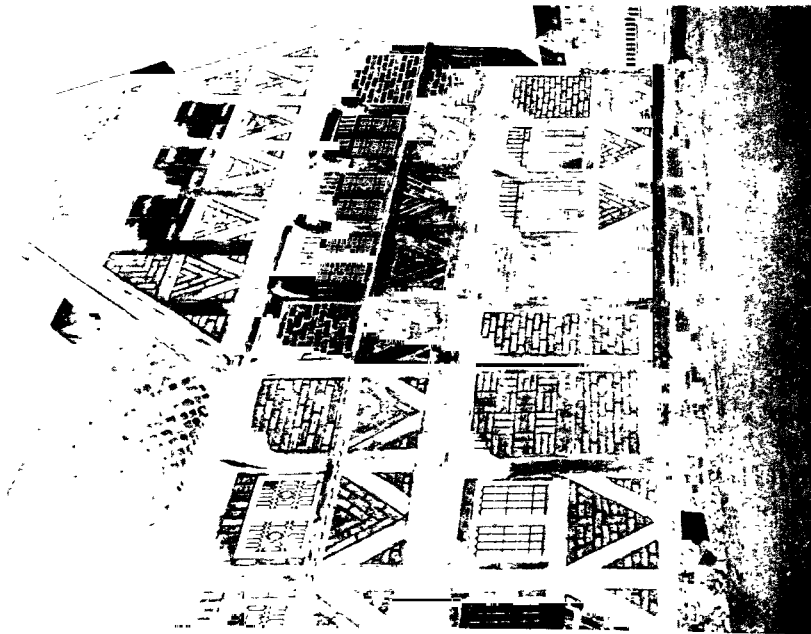


SIXTEENTH-CENTURY HOTEL DE VILLE, GHEENT, A.D. 1578-1583. WITH
RENAISSANCE ADDITIONS, A.D. 1595-1622

Angle treatment of returned elevations. The balcony forms a salient feature. The main forms repeat, but the details vary.



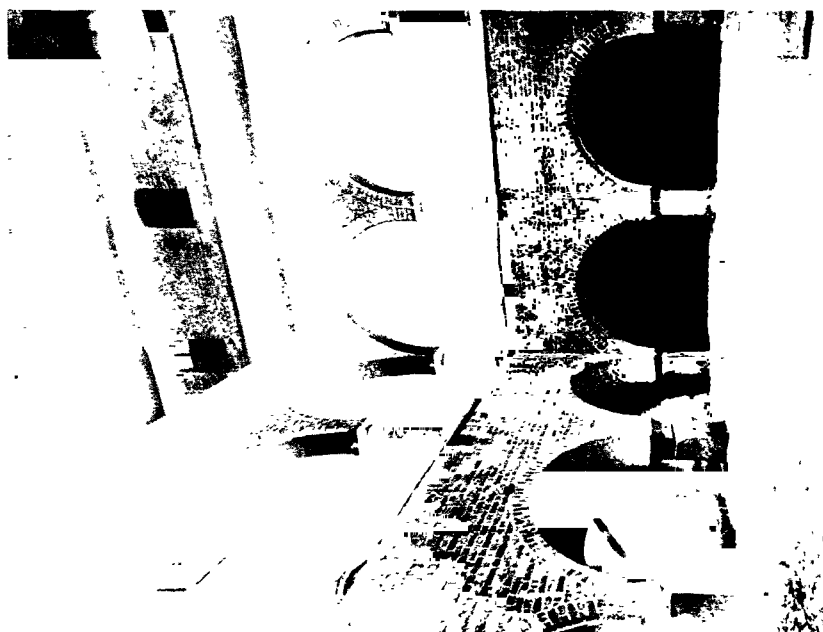
THE FRAUENKIRCHE, NUREMBERG, A.D. 1354-61. "HALL"
TYPE OF CHURCH WITH SINGLE ROOF SPANNING NAVE AND AISLES
Vertical expression is attained by treatment of western porch and lantern.



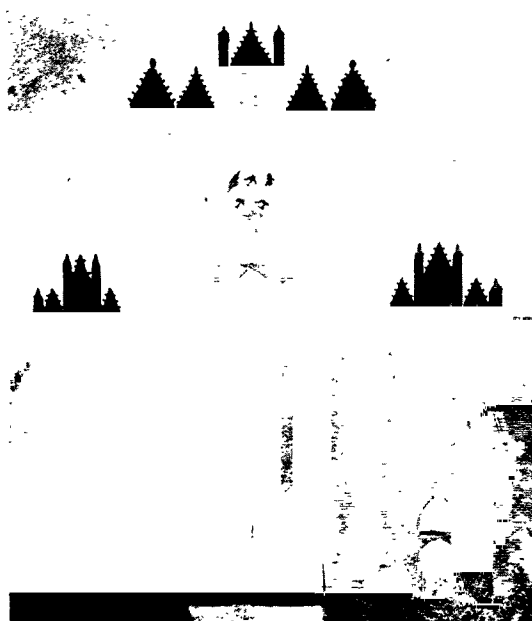
THE MAYOR'S HOUSE AT AARIUS, JUTLAND
Timber construction with infilling.



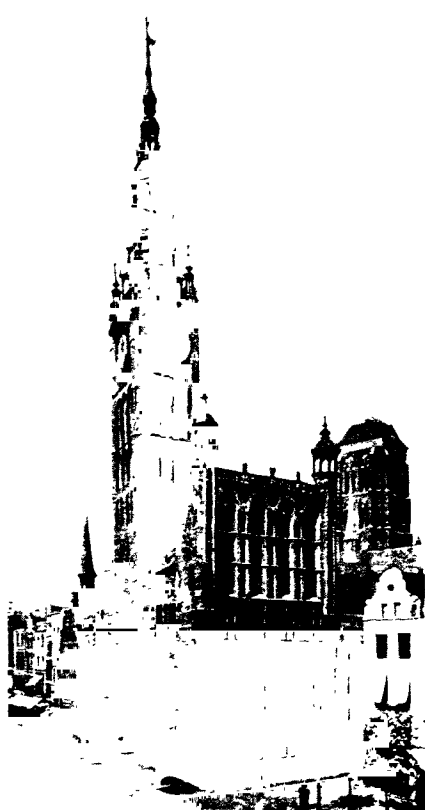
FREIBURG CATHEDRAL, A.D. 1283-1330. COMPOSITION IN WHICH WESTERN TOWER DOMINATES NAVIL TRANSIT AND CHANCEL. The twin turrets on either side of chancel echo the character of the great spire.



HEILSBURG CASTLE. REpetition OF SIMILAR ELEMENTS CONTRASTED WITH BROAD SURFACE

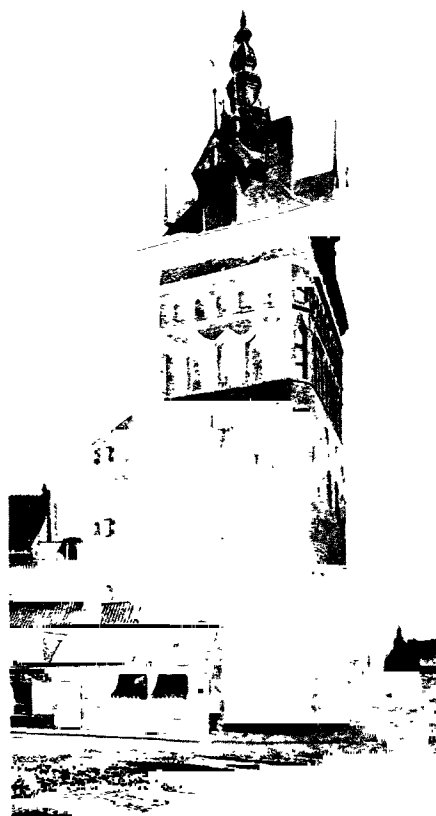


WEST GABLE OF ZISTER-
ZIENSERKLOSTERKIRCHE,
CHORIN. VERTICAL ACCENTUATION
ATTAINED BY MEANS OF SIDE TOWERS
AND ELONGATED WINDOWS



STOCKTURM TOWER, DANZIG. TOWER
IN THREE DIVISIONS COALESCING TO ONE
MASS

Base solid, arcades below roof of usual
belfry form. Interest concentrated on sil-
houette of roof features.

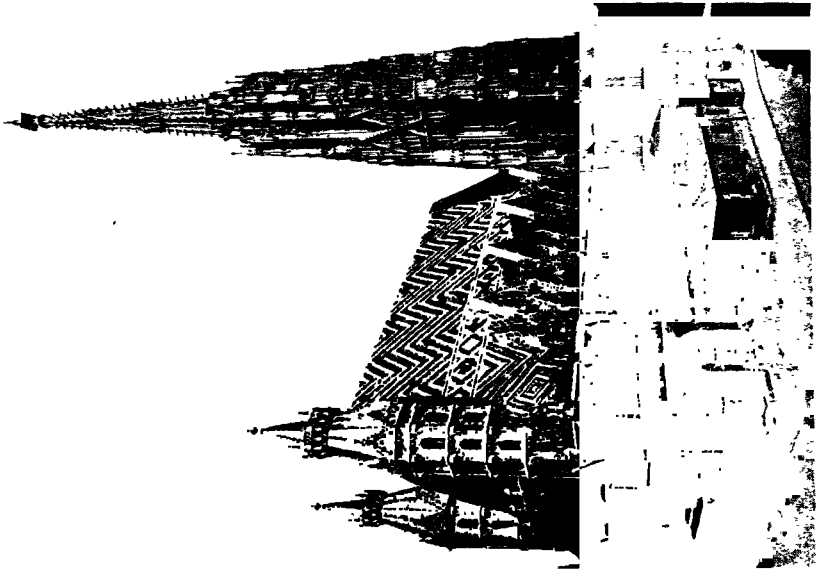


RATHAUS TOWER, DANZIG. CLOCK
TOWER OF ATTENUATED DESIGN, RELYING
FOR CONTRAST ON VARIETIES OF STAGES
OF THE FLÛCHE



THE CATHEDRAL, UPSALA, SWEDEN. Gothic Com-
position inspired from France

Twin western towers contrasted with central flèche at
crossing of transepts.



ST. STEPHEN'S CATHEDRAL, VIENNA, A.D. 1300-
1510. Typical "Hall" type of church with tower
completing transept, forming asymmetrical com-
position



AVILA CATHEDRAL, A.D. 1078 AND LATER. TWIN MASSES DEVISED TO SUPPORT SPIRES, WITH ARCHED LINK. DESIGN INCOMPLETE

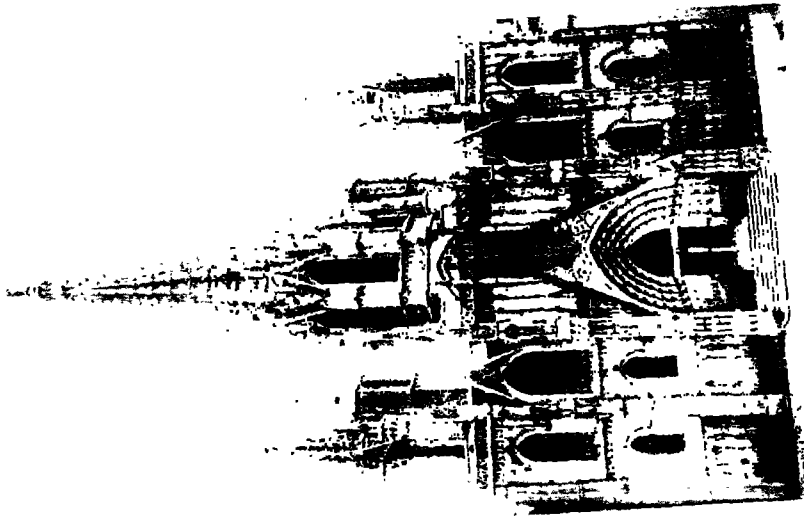
Chapter 3



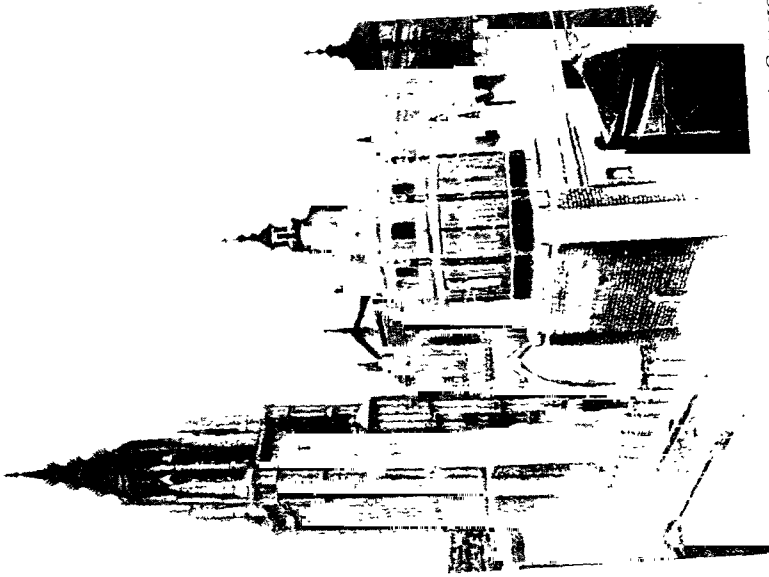


COLLEGE OF S. GREGORIO, VALLADOLID, A.D. 1488. TOWER-LIKE ENTRANCE IN WHICH THE DOORWAY IS SUBORDINATE TO THE SCULPTURED FAÇADE
Balance sought between horizontal and vertical components.

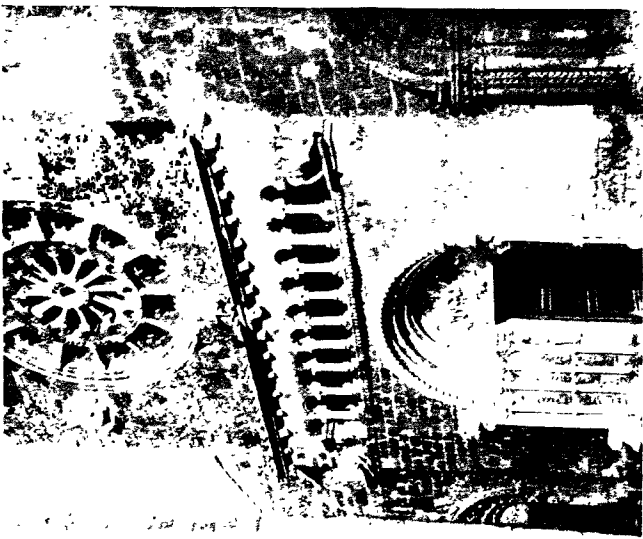
Chapter 3



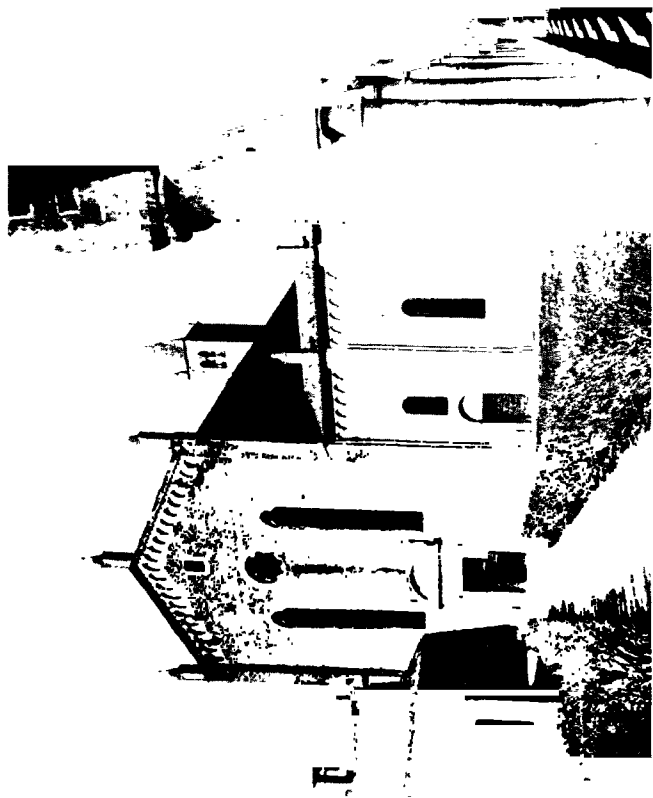
BARCELONA CATHEDRAL. Began A.D. 1288.
Composition of THREE MAIN MASSES
The central lantern over the western façade
harmonizes with the lesser spires on either side.



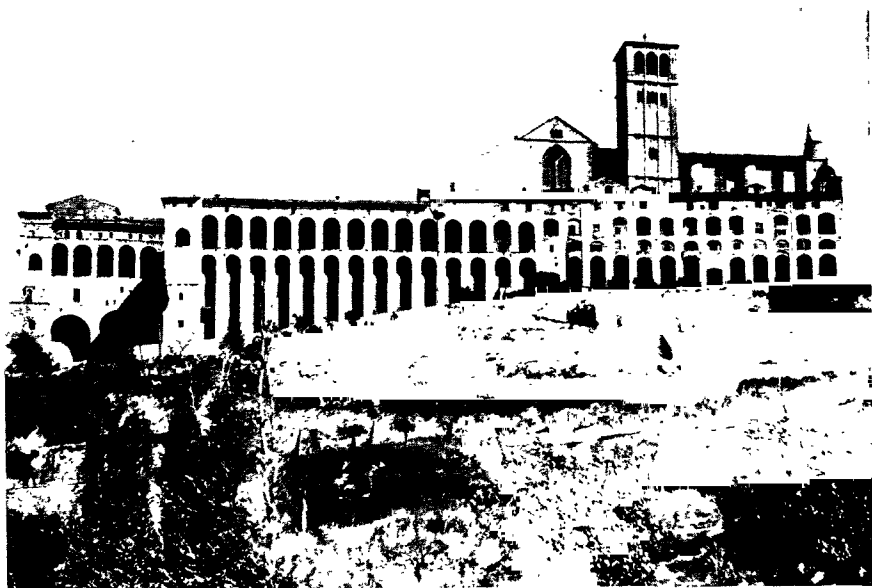
TOLEDO CATHEDRAL, A.D. 1227-1493. A Gothic
STRUCTURE WITH RENAISSANCE ADDITIONS
Designed to compose with the typical flat roofs and
buttresses.



S. MARIA, MAGGIORE, TOSCANELLA. DETAIL
SHOWING RECESSED DOORWAY, MINIATURE ARCADE
AND RICH WHEEL WINDOW



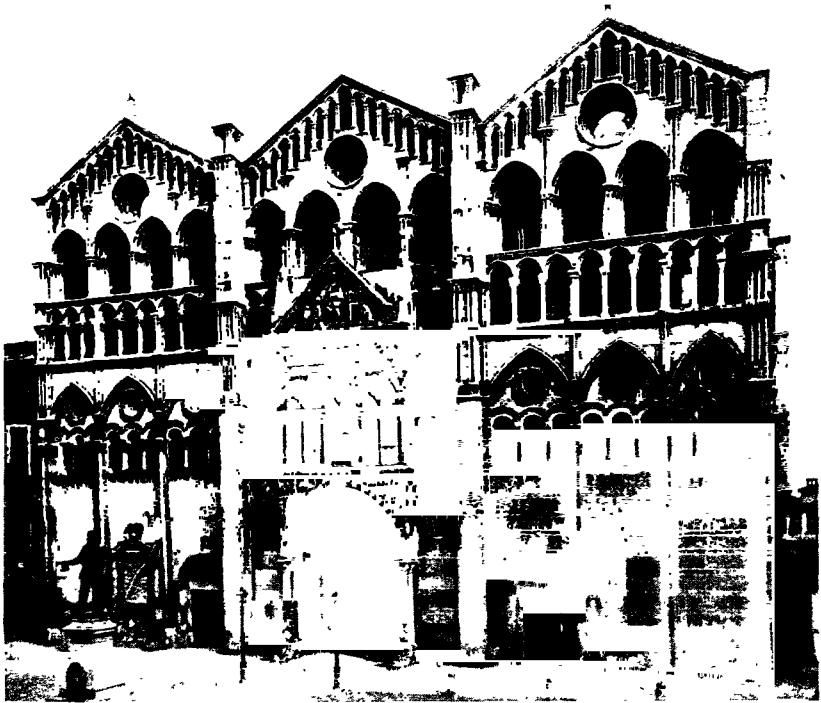
S. BERNARDINO, VERONA. SINGLE GABLE EXPRESSING ROOF OF LOW PITCH WITH
APPENDAGES IN SYMPATHY



UPPER AND LOWER BASILICAS, ST. FRANCIS, ASSISI, A.D. 1228-53. WALL ENCLOSURE EXPRESSED BY ARCADING FORMING THE CURTAIN TREATMENT TO THE CHURCH AND MONASTIC BUILDINGS

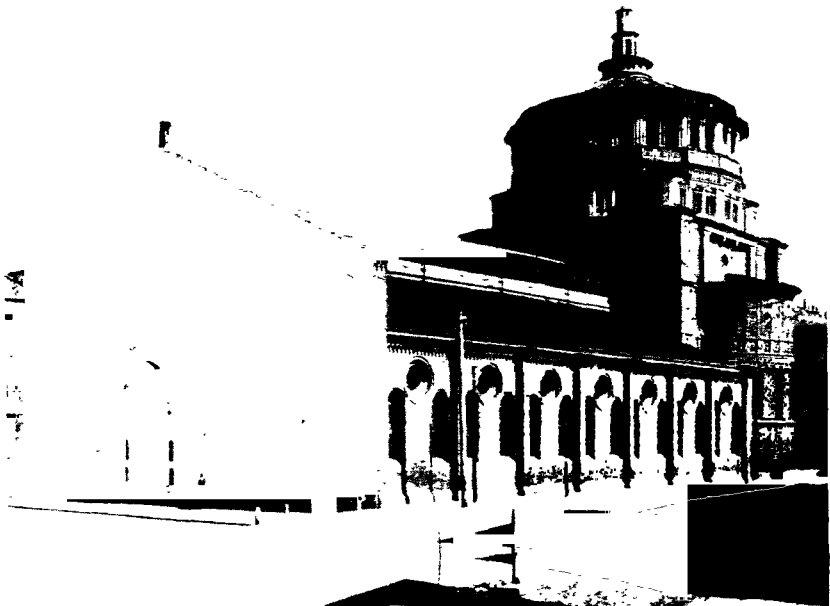


THE UNFINISHED CHURCH OF ST. PETRONIO, BOLOGNA. STEPPED COMPOSITION EXPRESSING NAVE AND AISLES

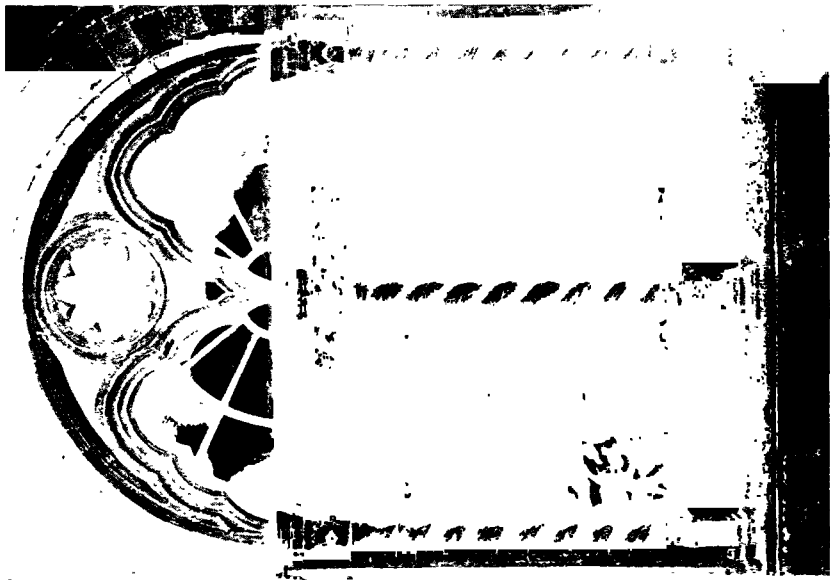


FERRARA CATHEDRAL. ITALIAN GOTHIC DERIVED FROM ROMANESQUE

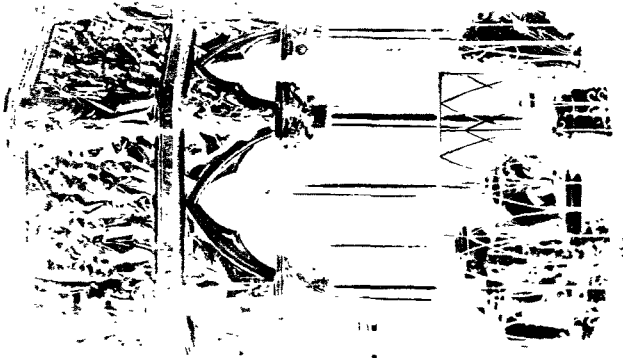
A composition of three equal masses forming the main façade. The introduction of a tribune over the central doorway emphasizes the importance of the middle bay and creates a focal point.



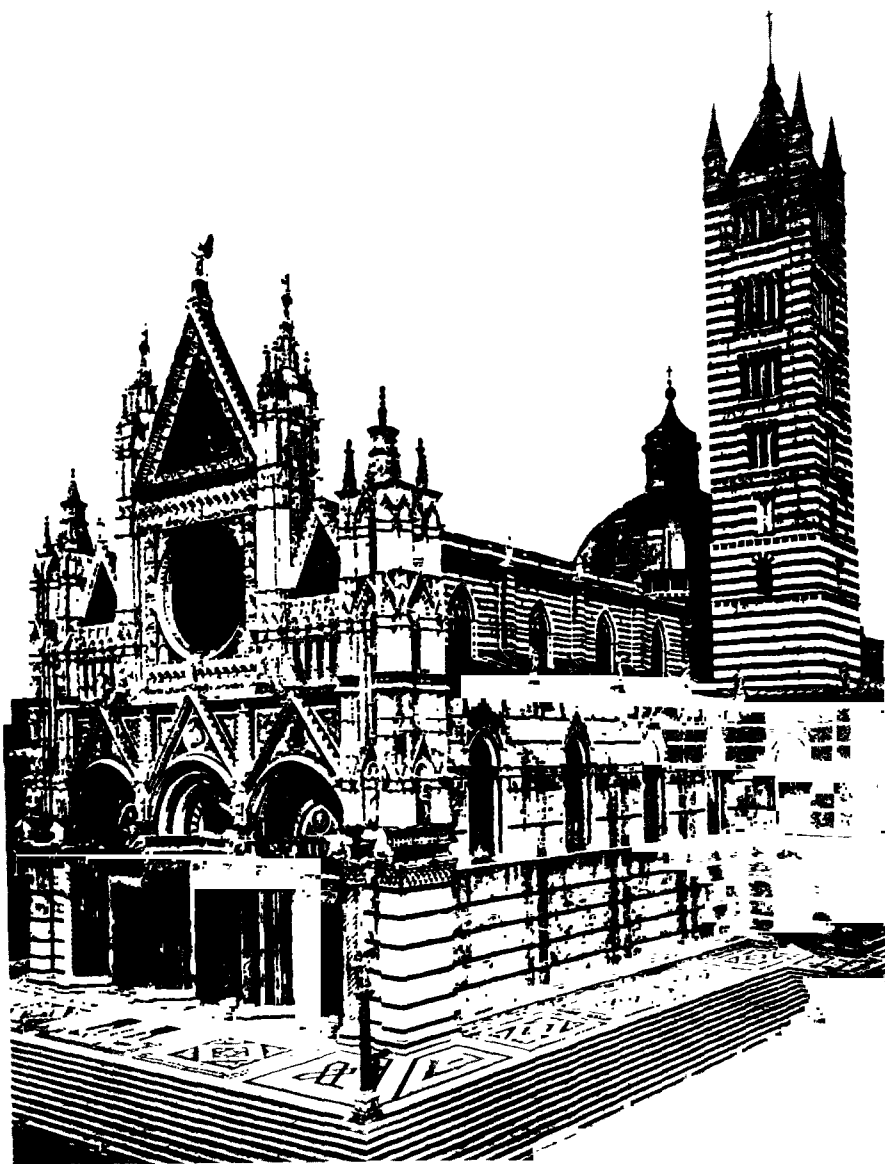
SANTA MARIA DELLE GRAZIE, MILAN. NAVE AND AISLES OF WEST
ELEVATION EXPRESSED BY SINGLE GABLE MASKING SIDE AISLES
Dome and transepts added by Bramante.



S. MARIA, NOVELLA, FLORENCE. TRACERY WITHIN A ROMANESQUE FRAME. TYPICAL OF ITALIAN GOTHIC

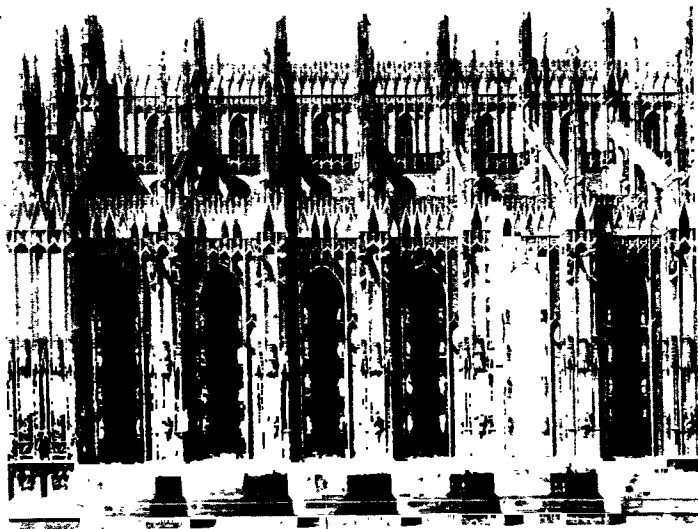


PULPIT, S. ANDREA, PISTOIA. GOTHIC THEME OF OPEN ARCADES SUPPORTING SCULPTURED PANELS FORMING PULPIT



SIENA CATHEDRAL, A.D. 1245-1380. AN EXAMPLE OF A FRONTISPIECE OF ELABORATE INTRICACY

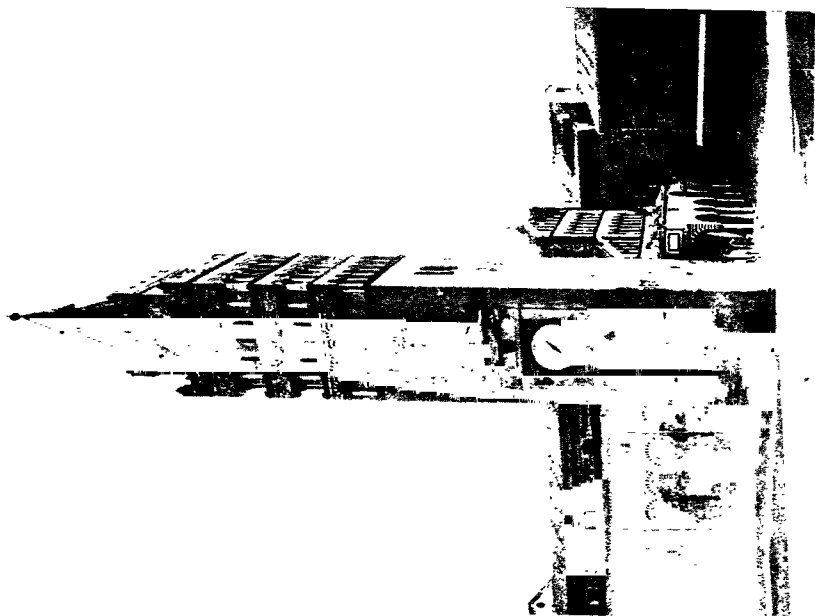
The campanile with its zebra-like treatment of local masonry dominates the silhouette of the building from the south.



MILAN CATHEDRAL, SOUTH AISLE, A.D. 1385-1485. WINDOWS
ALTERNATING WITH VERTICAL BUTTRESSES OF SIMILAR SCALE, PRODUCING
UNITY

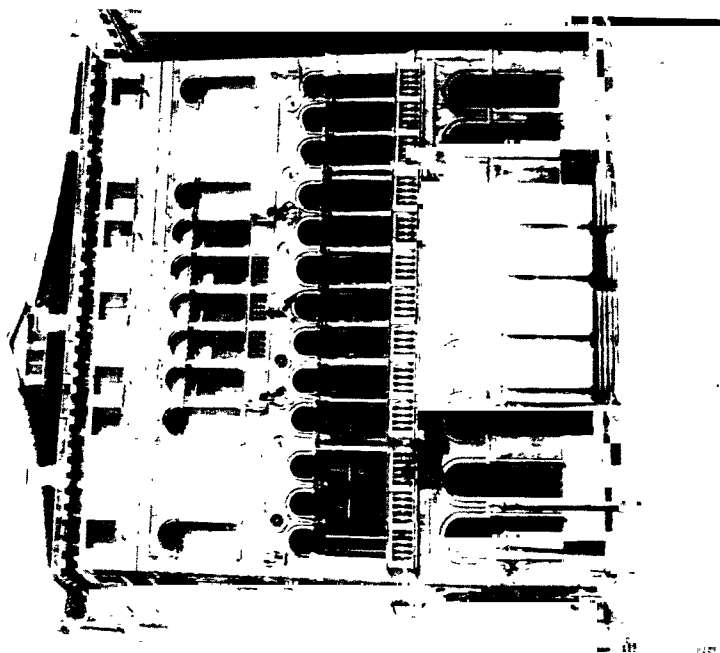


CHURCH OF S. RUFINO, ASSISI. MAIN FAÇADE
Nave expressed in gable form. Mass contrasted with campanile of
Romanesque silhouette.

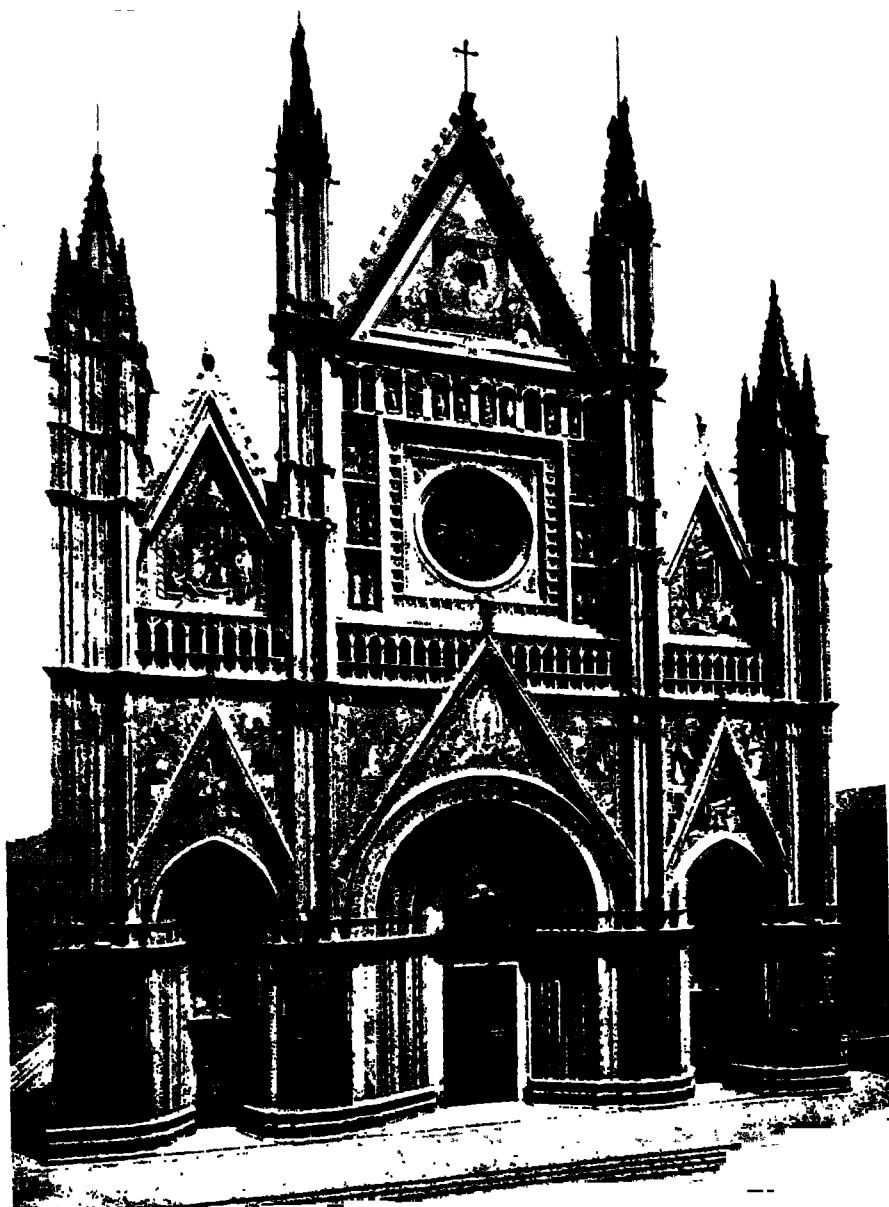


THE CAMPANILE OF THE CATHEDRAL, PISTOIA.
TOWER DESIGN WITH UPPER PORTION ENRICHED WITH THREE
TIERS OF ARCADES

The clock is of later date.

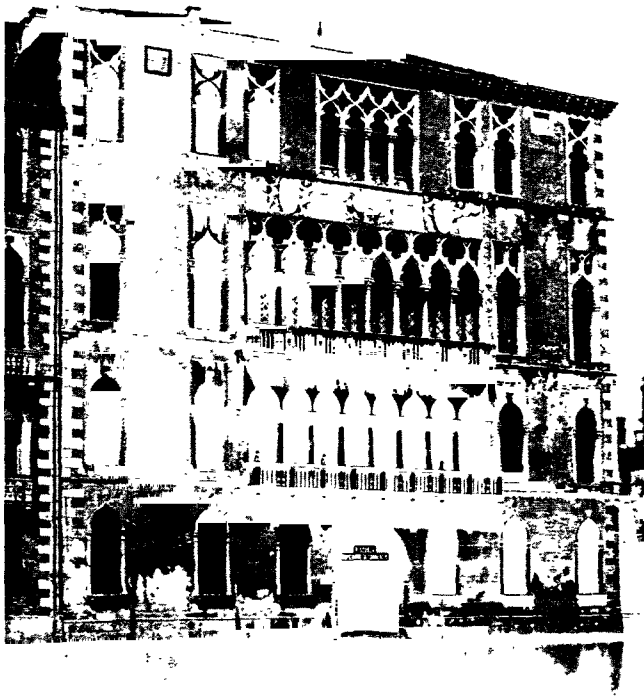


PALAZZO, LOREDAN, VENICE. AN EXAMPLE OF ARCADED
FENESTRATION IN THE LOYBARDIC AND ISLAMIC MANNER, EX-
PRESSING ENTRANCE LOGGIA AND STATE APARTMENTS AT THE
LEVEL OF THE FIRST FLOOR



FAÇADE OF THE CATHEDRAL, ORVIETO, A.D. 1290-1310. TREATMENT OF WEST FRONT, EXPRESSING NAVE AND AISLES

This design is confused, despite the beauty of the ornament and decoration.



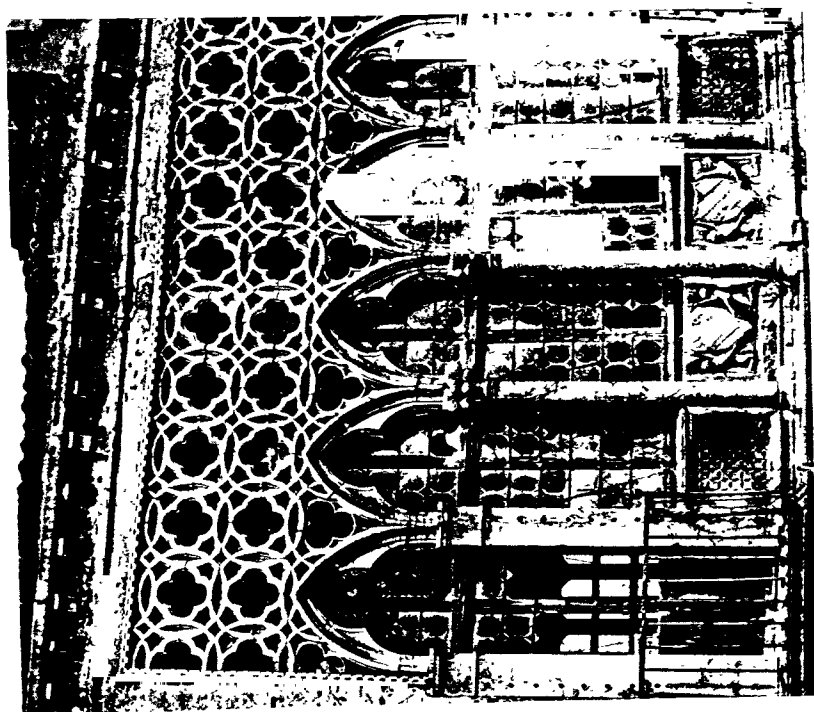
PALAZZO FOSCARI, VENICE. DESIGN SHOWING GROUPING OF
CENTRAL WINDOWS TO EXPRESS PRINCIPAL STATE ROOMS



DUCAL PALACE, VENICE, A.D. 1309-1424. EXTERNAL EXPRESSION OF ARCADED LOGGIAS
FORMING CONTRAST WITH SOLID WALLING OVER

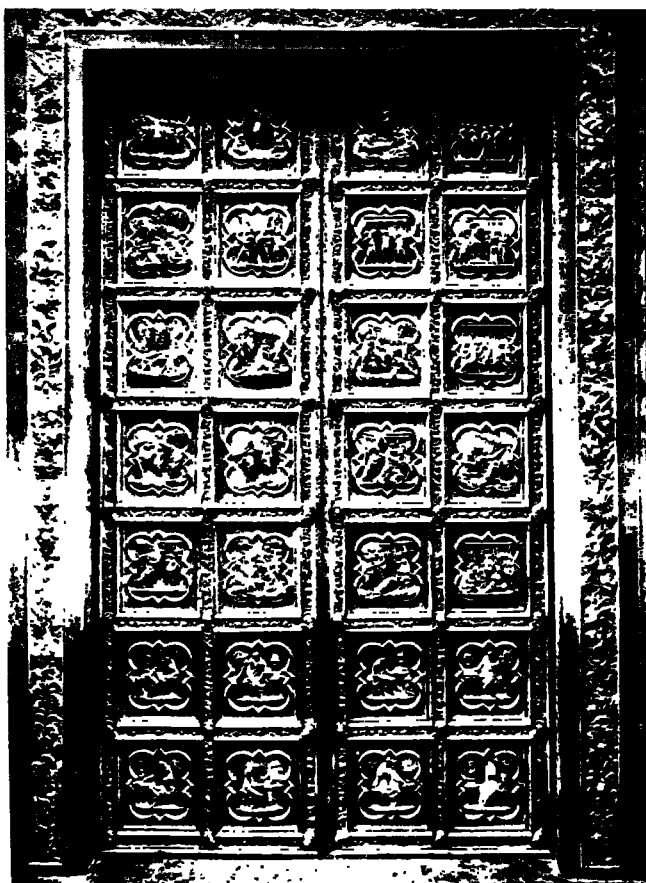


PALAZZO CHIARABBA, VENICE. BALCONY AND
WINDOWS WITH SYMPATHETIC TREATMENT OF DETAIL



PALAZZO CIGOGNO, VENICE. DIAPHRAGM WINDOW, SHOWING
TWO FORMS OF TRACERY

Chapter 4
The Renaissance in Europe

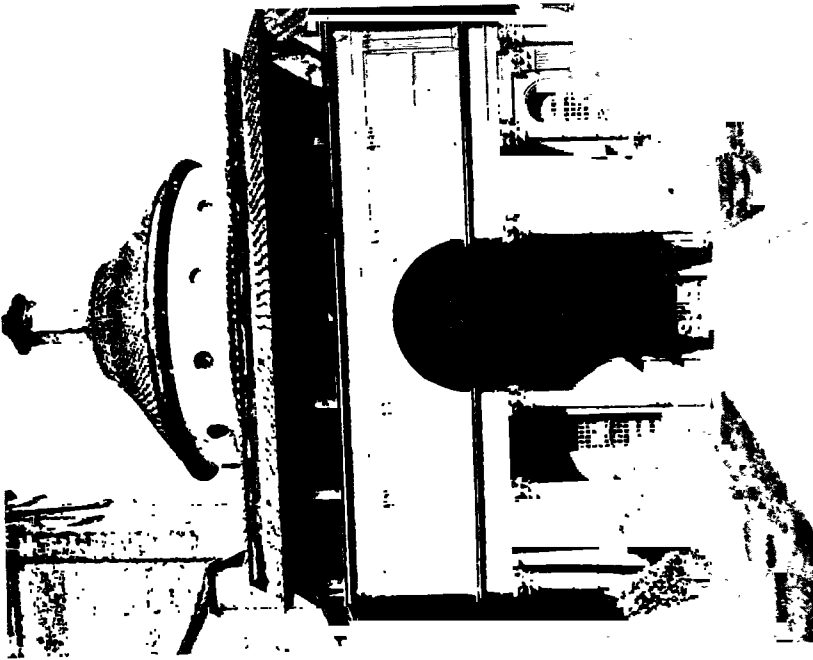


BAPTISTERY DOOR,
FLORENCE. LINES OF
DESIGN CONFORMING TO
TRADITIONAL FRAMING
OF DOORS

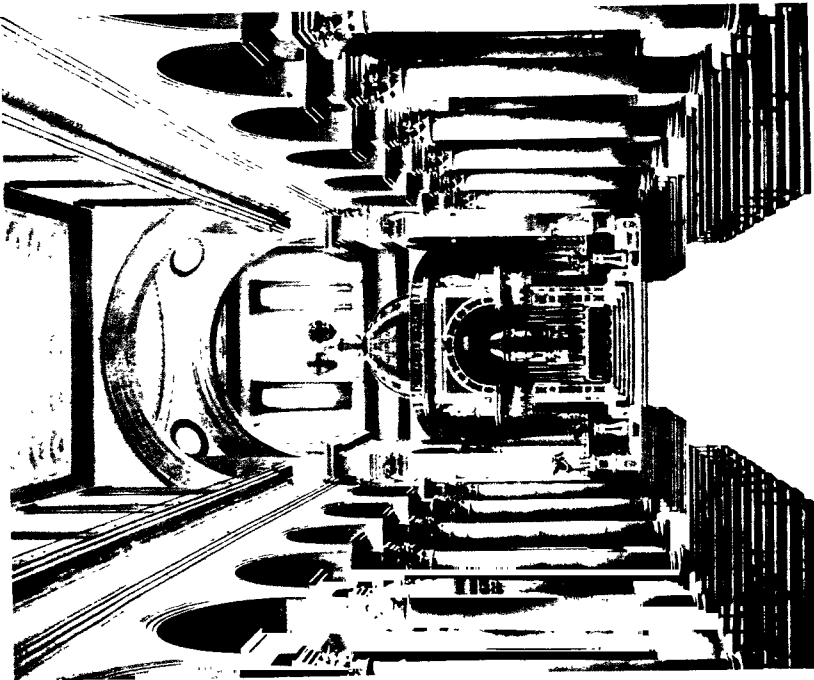
Variation arrived at by
individual treatment of each
panel. (Lorenzo Ghiberti,
Sculptor.)



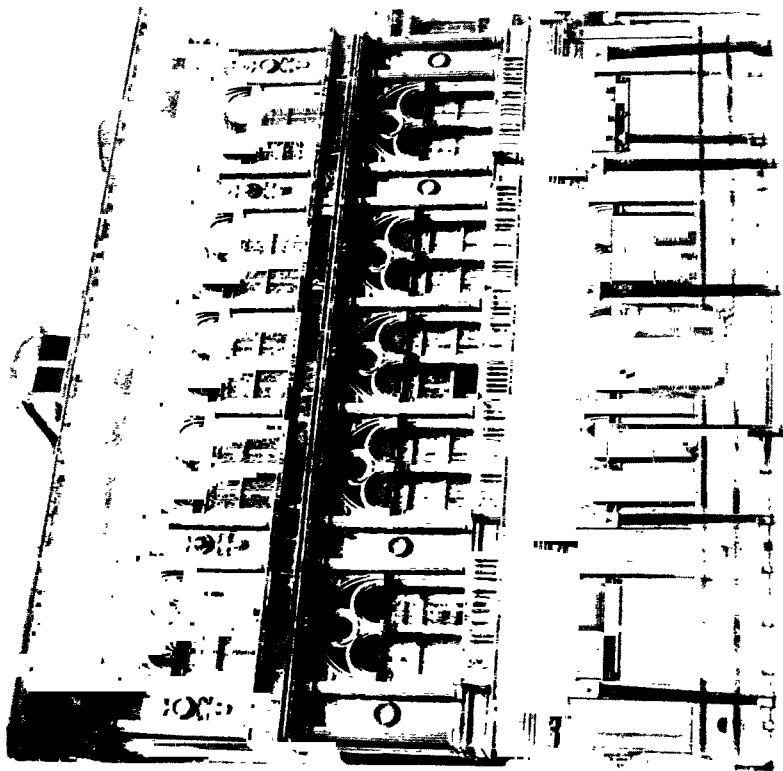
PRATO PULPIT. AN EXAMPLE OF SCULPTURAL ARCHITECTURE EMBODYING EARLIEST
DERIVED CLASSICAL ELEMENTS



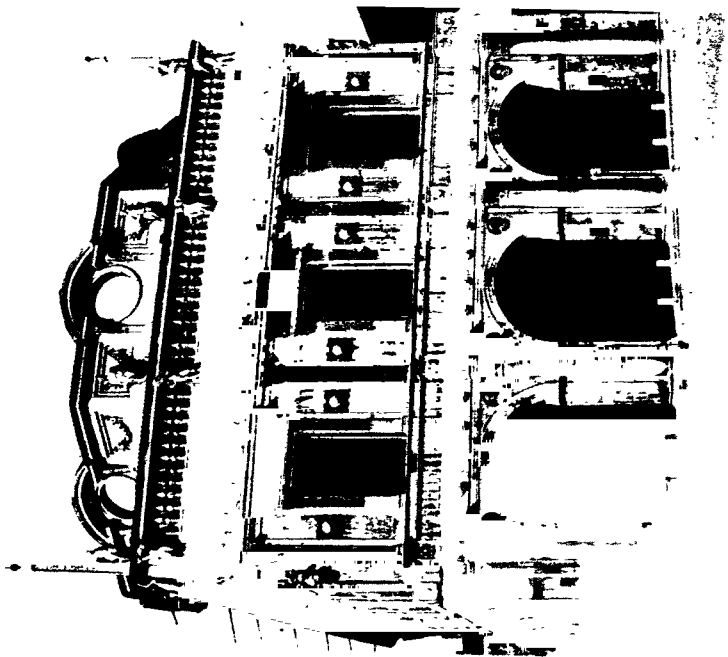
PAZZI CHAPEL, FLORENCE. ACCENTUATION OF CENTRAL MOTIF CONTRASTED WITH DWARF HORIZONTAL FALSE LOGGIA INTRODUCED FOR AESTHETIC REASONS ONLY
(Filippo Brunelleschi, *Architect*.)



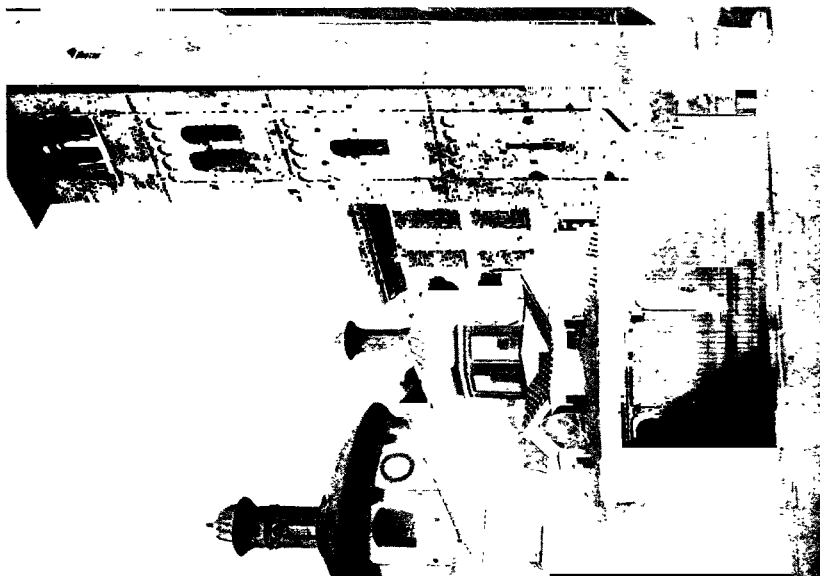
CHURCH OF SANTO SPIRITO, FLORENCE. CLASSICAL TRIUMPH COMBINED WITH LATIN CROSS PLAN
The central dome at the crossing is subordinate to the perspective of the arcades (Filippo Brunelleschi, *Architect*.)



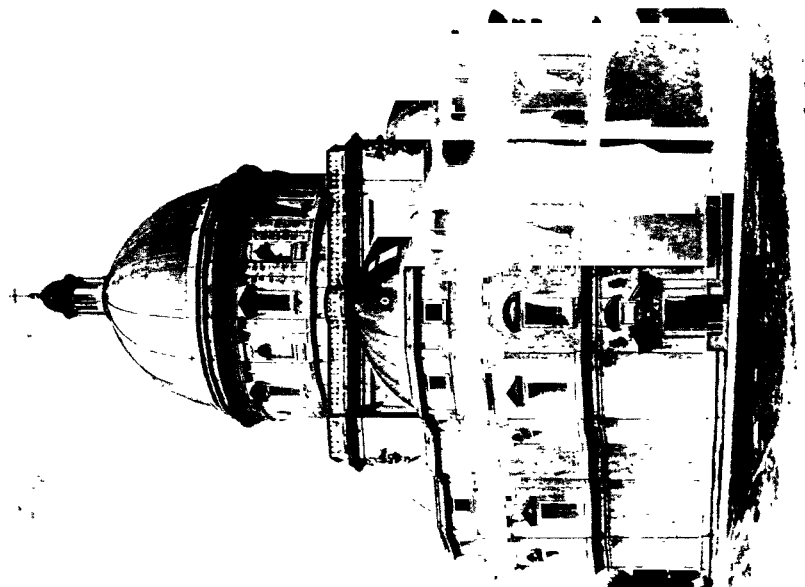
PALAZZO VENDRAMINI, VENICE. HORIZONTAL SUBDIVISION MARKING FLOORS
Fenestration determined by tradition. (Pietro Lombardo, *Architect.*)



PALAZZO MUNICIPIO, BRESCIA. DEVELOPMENT OF EARLIER TYPE OF ARCADED LOGGIA WITH RECTANGULAR FENESTRATION OVER CROWNING FEATURE ADDED LATER
(Formentone of Vicenza, *Architect.*)



CHURCH SAN SATIRO, MILAN. PYRAMIDAL DESIGN IN THREE STAGES, VARIED AT EACH CHANGE (Bramante, - Architect.)



CHURCH OF SANTA MARIA DELLA CONSOLAZIONE, TODE. DOMICAL TRI-AXIAL DERIVED FROM GREEK CROSS PLAN



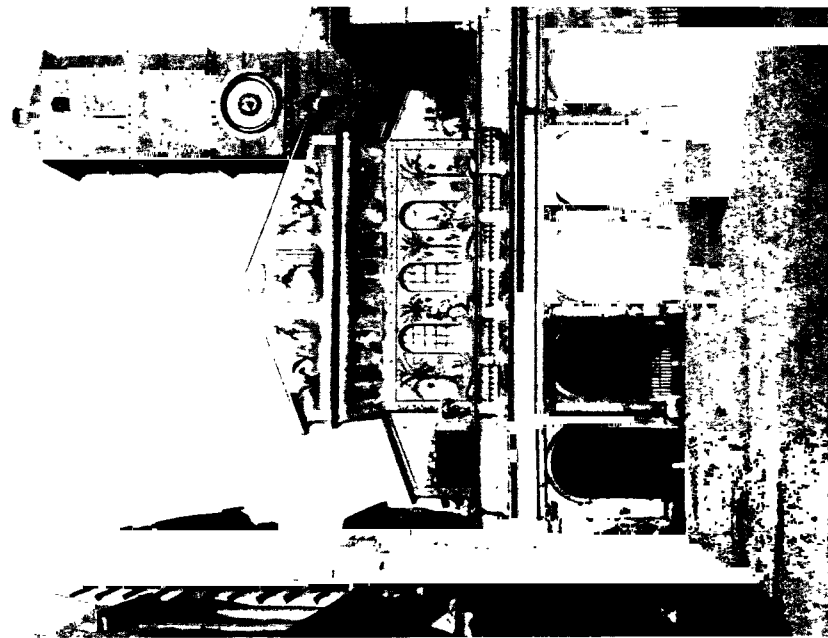
PALAZZO CONSIGLIO, VERONA. AN ARCADED LOGGIA CONTRASTED WITH LOMBARDIC FENESTRATION ABOVE

Contrast obtained by broad treatment of upper floor. (Fra. Giocondo, *Architect.*)

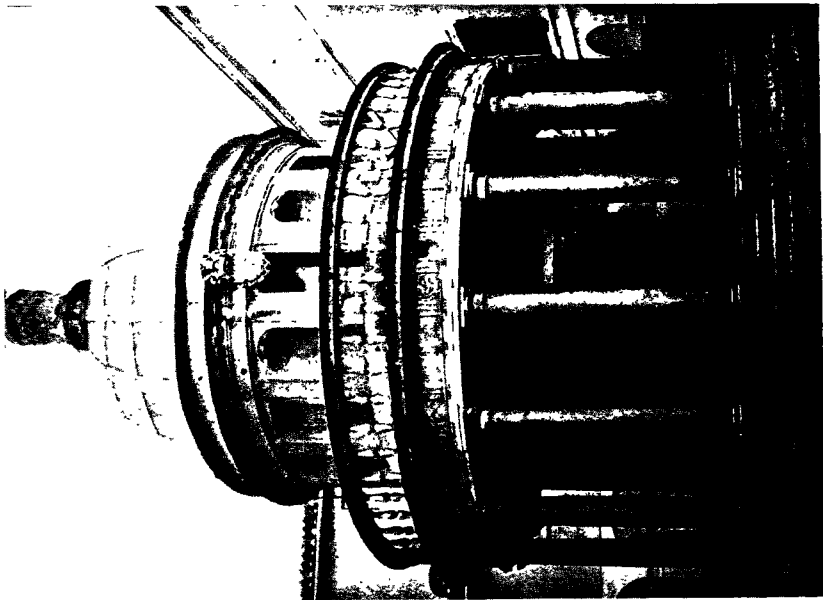


PALAZZO DELLA CANCELLERIA, ROME. PREDOMINANCE OF SOLID TO VOID
ACCENTUATED BY PILASTER TREATMENT IN PAIRS

Horizontal subdivision into three parts with rustication as a general theme. (Bramante, *Architect.*)



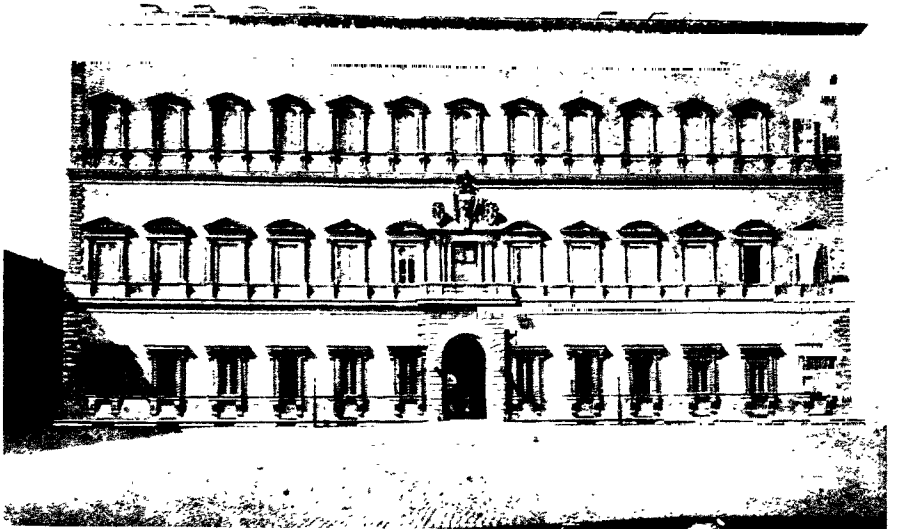
FAÇADE OF S.M. IN TRASTEVERE. BASILICAN TREATMENT OF NAVE AND AISLES EXPRESSED EXTERNALLY IN THE MANNER OF THE RENAISSANCE.



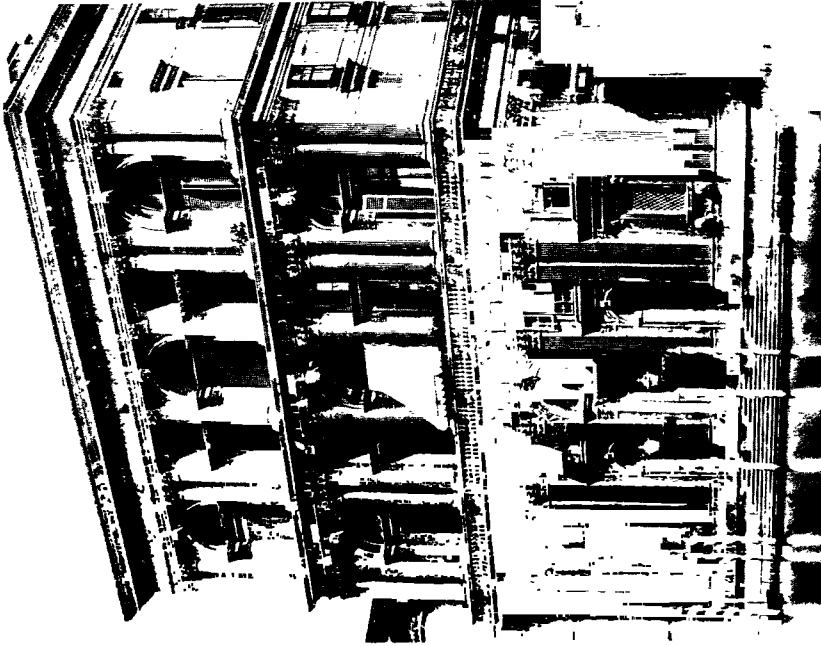
THE TEMPIETTO, ROME. AN EXAMPLE OF EARLY DOMED CONSTRUCTION LEADING EVENTUALLY TO THE DESIGN OF THE DOME OF ST. PETER'S
In the cloisters of San Pietro in Montorio. (Bramante, *Architect.*)



VILLA FARNESINA, ROME. SUPERIMPOSITION OF PILASTER ORDER. GROUND STOREY DOMINANT. STRONG HORIZONTAL DIVISIONING
(Baldassare Peruzzi, *Architect.*)

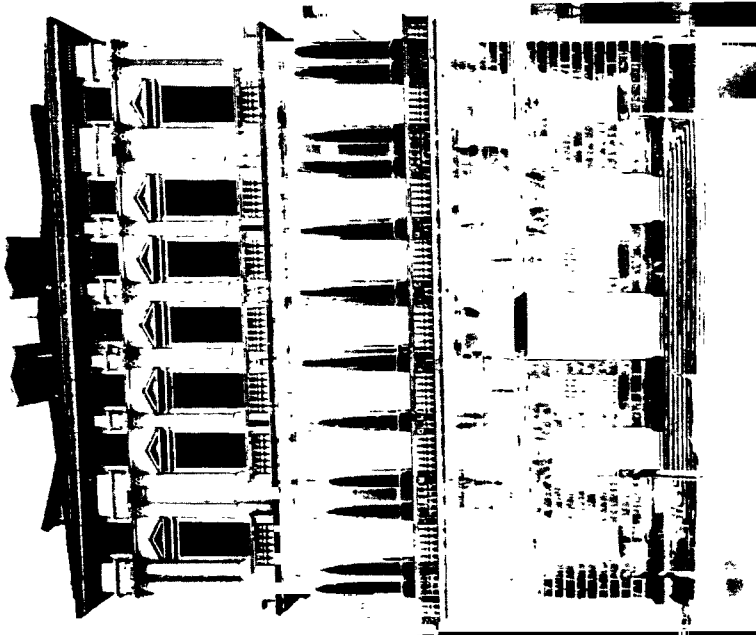


FARNESE PALACE, ROME. HORIZONTAL SUBDIVISIONING IN THREE PARTS. WINDOWS OF ALMOST EQUAL PROPORTION CONTRASTED WITH PLAIN WALL SURFACES
Central doorway and window treatment over forms main focal point. (Antonio San Gallo and Michelangelo, *Architects.*)



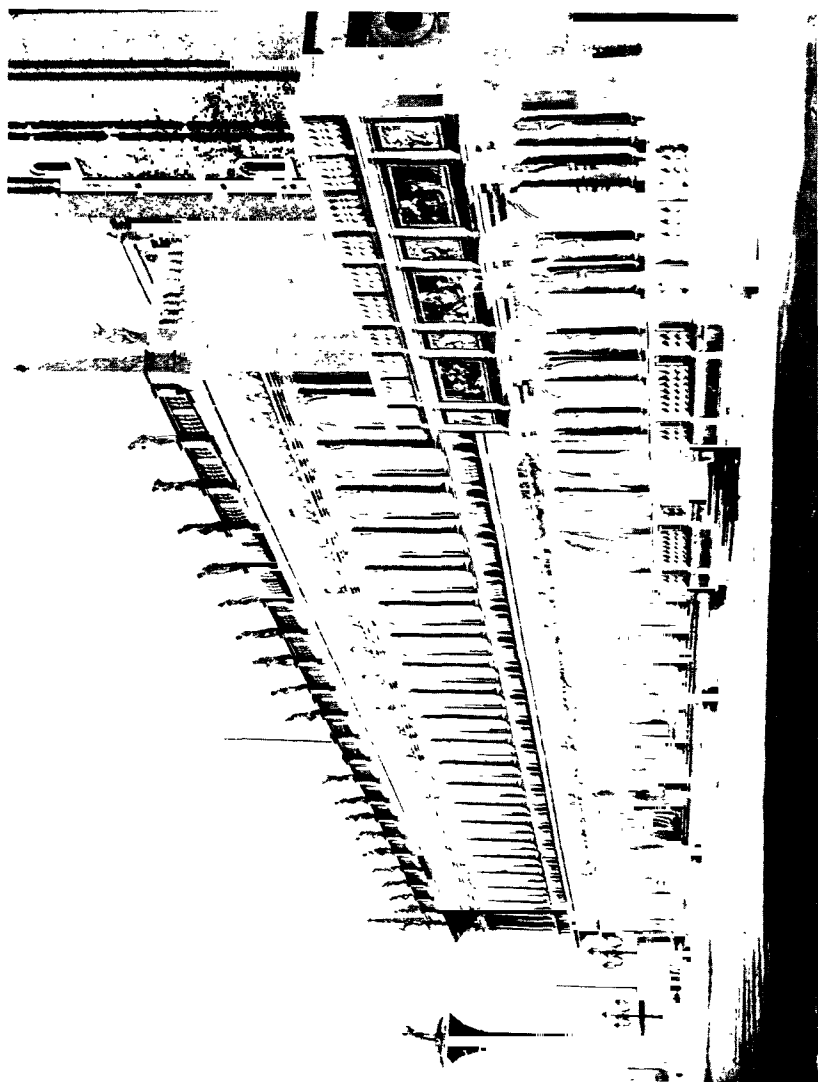
PALAZZO GRIMANI, VENICE. ELEVATIONAL TREATMENT OF THREE HORIZONTAL SUBDIVISIONS, THE LARGEST FORMING THE BASE, THE OTHERS DIMINISHING IN SCALE.

The grouping of the three central openings recalls the earlier Gothic tradition of Venice. Variation of surface treatment characteristic. (Michele Sanmichele, *Architect*.)



PALAZZO CONTARINI, VENICE. MAIN INTEREST CONSISTS OF THREE-PART HORIZONTAL SUBDIVISIONING, THE SMALLEST DIVISION BEING IN THE MIDDLE.

The grouping of the five central windows at the level of the piano nobile is contrasted with the end treatment. The base is rusticated to create an appearance of strength.

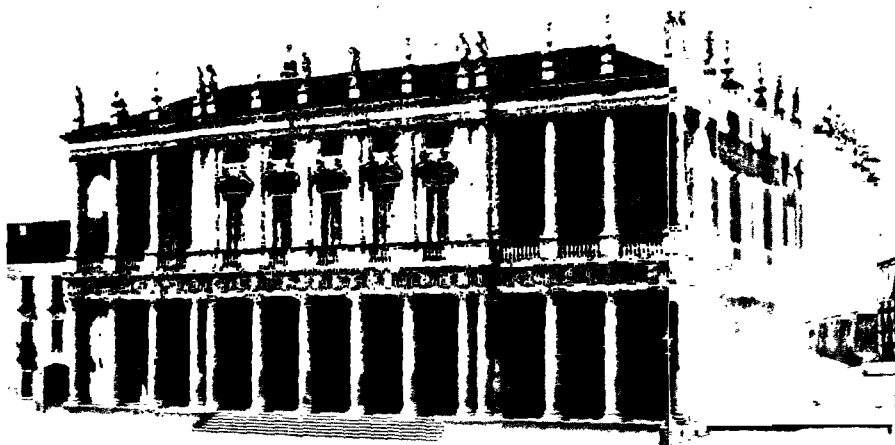


LIBRARY OF ST. MARK AND THE LOGGETTA, VENICE. STRONG HORIZONTAL LINES EMPHASIZED BY BALUSTRADES

Ordonnance repeated at two levels. (Jacopo Sansovino, *Architet.*)



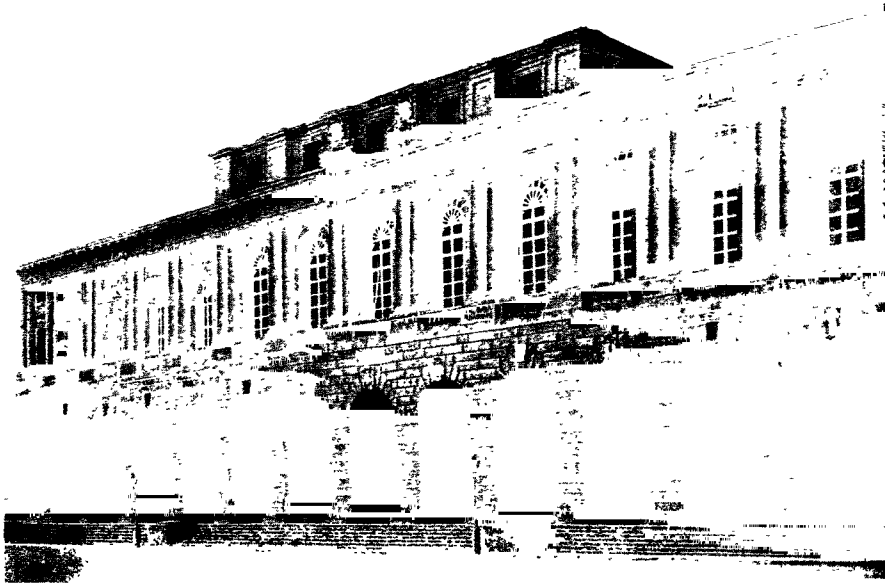
THE UFFIZI GALLERY, FLORENCE. EXAMPLE OF GALLERY DESIGN EXPRESSED INTERNALLY
The loggias at pavement level provide covered side walks. The order employed structurally combines with the mezzanine to form a strong base to the superstructure. (Giorgio Vasari, - *Architetti*.)



MUSEO, VICENZA. OPEN LOGGIAS FRAMING CENTRAL FENESTRATION
(Andrea Palladio, *Architect.*)



BASILICA PALLADIANA, VICENZA. ARCADE COMPOSITION ON TWO FLOORS, BUILT
ROUND A MEDIEVAL BUILDING
(Andrea Palladio, *Architect.*)



PALAZZO GRAN GUARDIA VECCHIA, VERONA. SUBTLE COMPOSITION PRODUCED BY THE MINIMUM OF BREAKS IN THE HORIZONTAL MEMBERS

Repetition of arched motifs contrasted with rectangular attic storey. The change from the arched treatment on either side of the attic introduces a variation of sub-interest. (Domenico Curtona, *Architect*, 1609.)



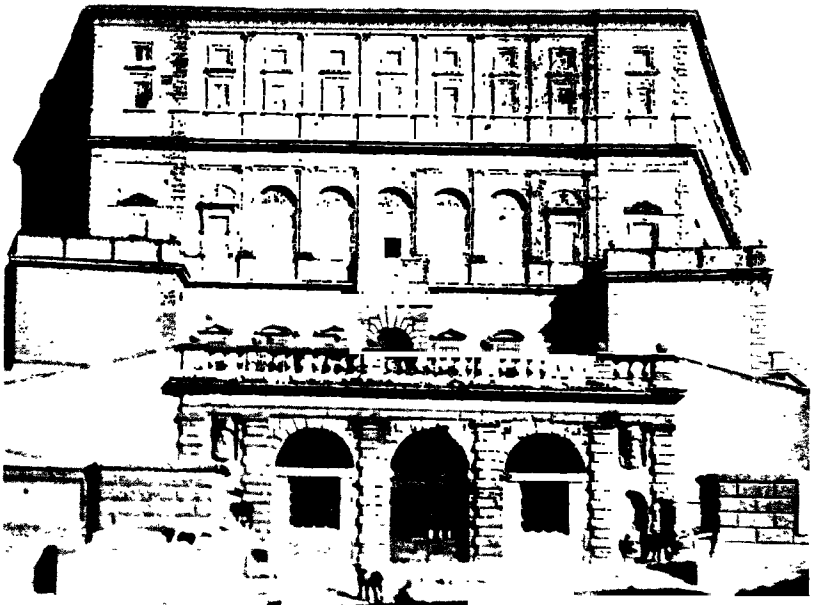
PALACE OF "PAPA JULIO," ROME. EFFECT PRODUCED BY DOMINANCE OF PLAIN SURFACES OVER VOIDS

The angle treatment allows for display of sculpture. (Vignola, *Architect*.)



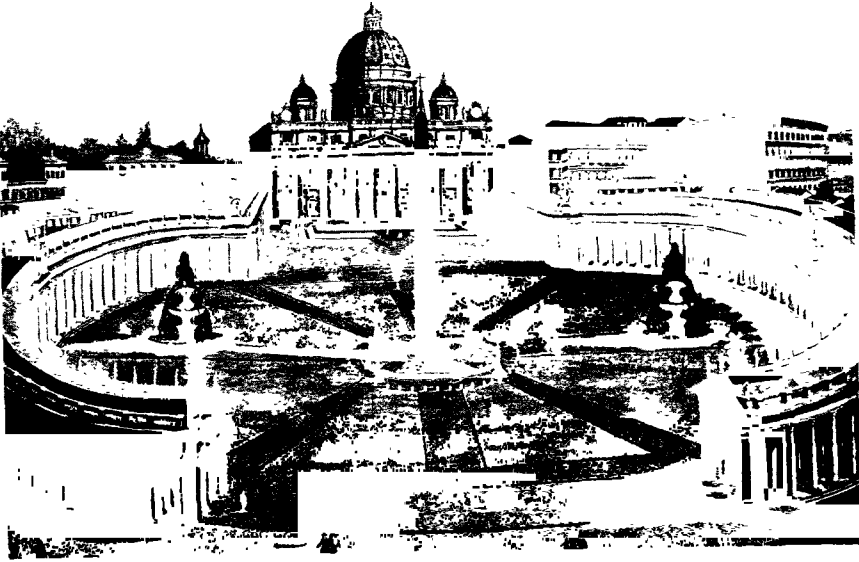
THE PALAZZO MADAMA, ROME. A BAROQUE FAÇADE WITH PEDIMENTED WINDOWS FOR TWO FLOORS

Emphasis is given to the focal point, which is the door, by special treatment of the window above.



THE FARNESE PALACE, CAPRAROLA. MAIN BUILDING FORMING CLIMAX TO A TERRACE SYSTEM

The lower portions of the composition rusticated to afford contrasts of strength. (Vignola, *Architect.*)



ST. PETER'S, ROME. COLONNADE, ITALIAN BAROQUE, SEVENTEENTH CENTURY

The double semicircular colonnade enclosing the Piazza augments the formality of the setting. (Bernini, *Architect*.)

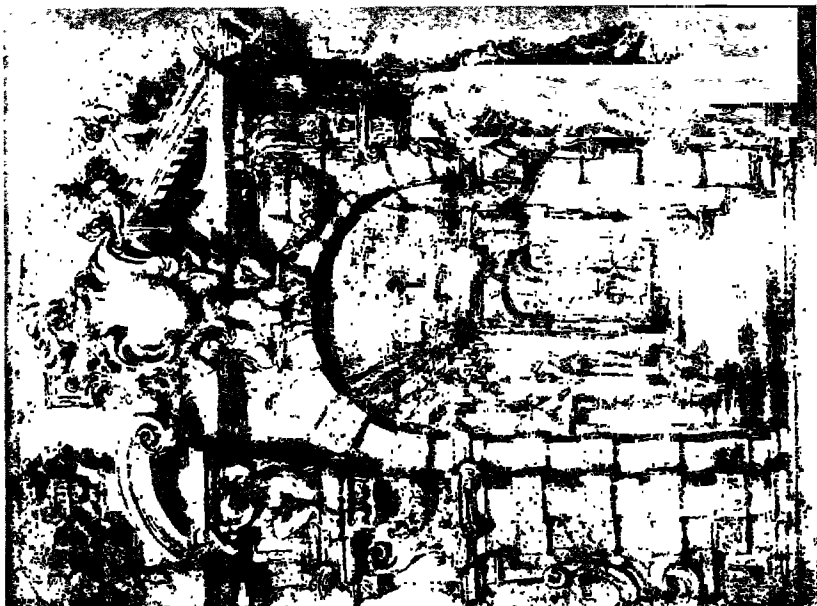


SANTA MARIA DELLA SALUTE, VENICE, 1631-82. PYRAMIDAL COMPOSITION. DOME OF TIMBER COVERED WITH LEAD, BUTRESSED BY GIANT SCROLLS WHICH CONNECT WITH MAIN PORTION OF CHURCH

(Baldassare Longhena
Architect)



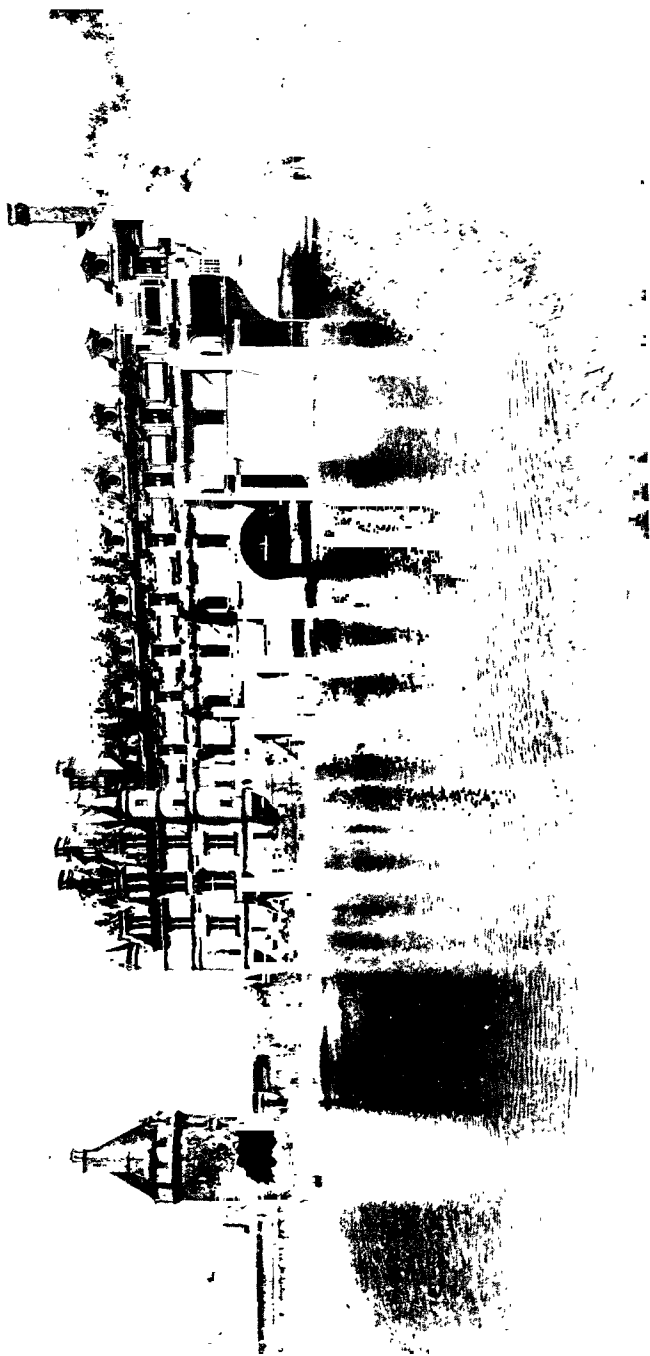
GENOA UNIVERSITY. ITALIAN BAROQUE, LATE SEVENTEENTH CENTURY
Monumental staircase with gallery. Columns employed structurally to support vaulting system, which forms part of the ensemble. (Bartolomeo Bianco, *Architect*.)



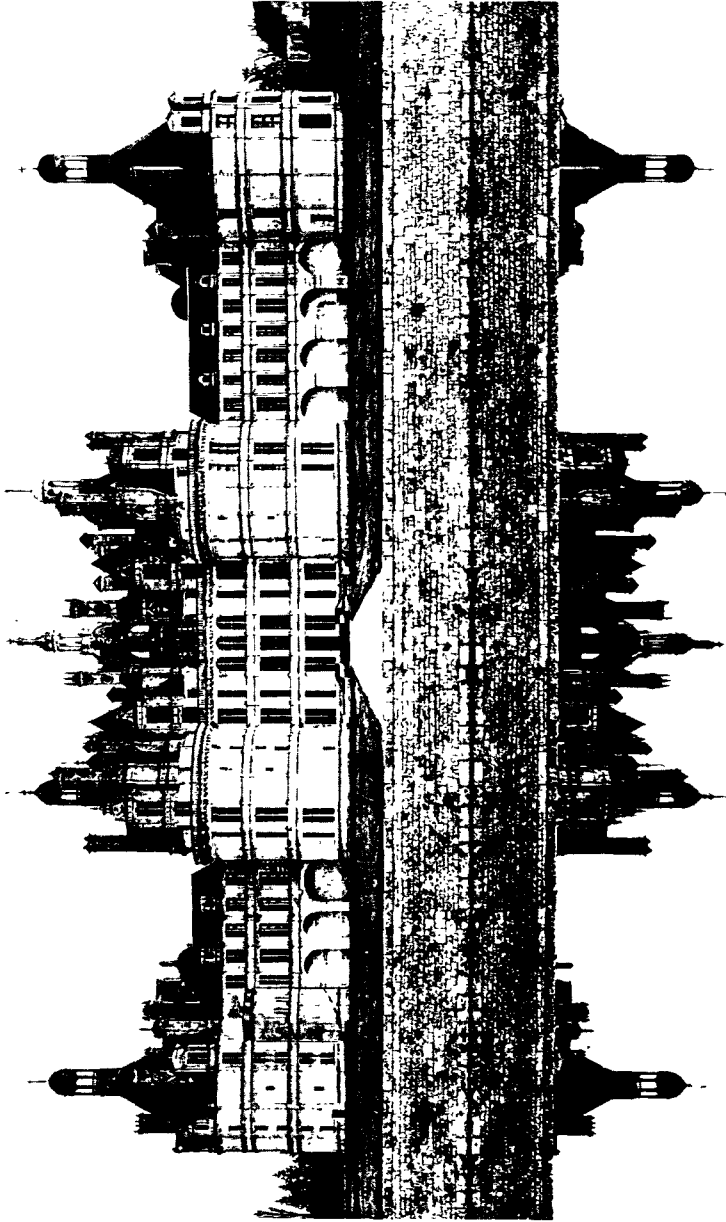
PIERRE PUGET, ENTRANCE. FRENCH BAROQUE ARCHITECTURE, LATE SEVENTEENTH CENTURY
Alternative designs for framing an arched opening.



THE GREAT STAIRWAY, BLOIS, 1515-30. STYLE OF FRANCIS I
Medieval staircase expressed in Renaissance detail. Vertical lines in opposition to horizontal bands disconnect the two parts of the elevation.



THE CHÂTEAU, CHENONCEAUX. AS ENLARGED BY PHILIBERT DE L'ORME, 1557
A magnificent example of a bridge gallery built over a river. Effect resulting from contrast of main arches with fenestration over.



CHAMBORD, 1526-44. STYLE OF FRANCIS I

Medieval traditions respected in the silhouette of the roofs, while an attempt is made to secure uniformity in the grouping of the elevations. The horizontal lines under the windows of Italian origin tie the composition. Attributed to Domenico Bernabei, "Boccador."



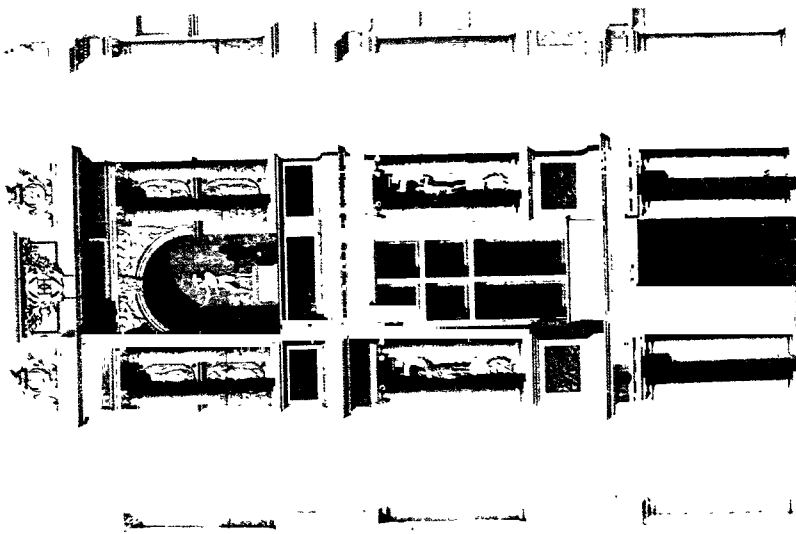
THE LOUVRE, PARIS. PAVILION DE L'HORLOGE, 1624-30

Pavilion grouping roofed independently. Superimposition of orders contrasting the arch with the rectangular opening. The introduction of an attic storey and the retention of curvilinear pediments recall the *lucarne* treatment of the previous century and at the same time forms a submotif serving as a transitional feature between the roof and the body of the building. (J. Le Mercier, *Architect*)



HOTEL DES MONNAIES, AVIGNON. AN ASTYLAR FAÇADE SUBDIVIDED INTO THREE HORIZONTAL PARTS

Note the contrast between the rusticated base and the triangular grouping of the carved trophies.



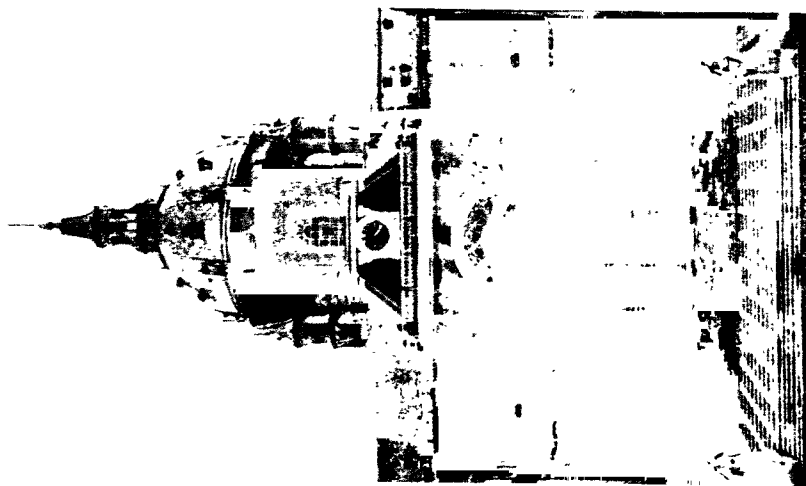
CHÂTEAU D'ANET, SIXTH HENRI II. A STUDIED
EXAMPLE OF SUPERIMPOSED ORDERS

Verticality obtained by pylonic treatment and breaks
over the coupled columns. (Philibert de L'Orme, *Architec-*
tect.)



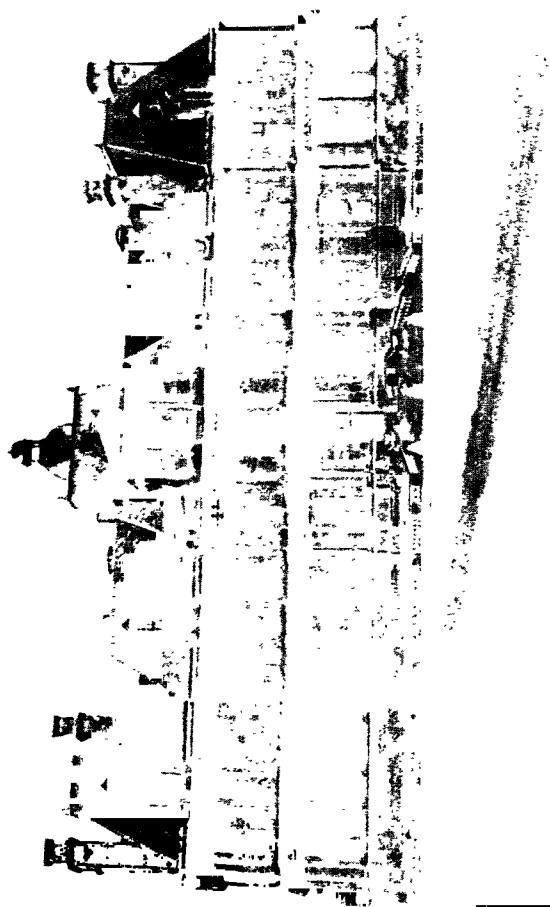
PALAIS DE LUXEMBOURG, PARIS, 1615-24. A MONU-
MENTAL GATEWAY EXTENDING THE THEME INITIATED IN
FRANCE BY PRIMAICCIO

Plastic effect obtained through the treatment of "chain" rustica-
tion. Emphasis given to axis by the drum and dome. (Salomon
de Brosse, *Architect*.)



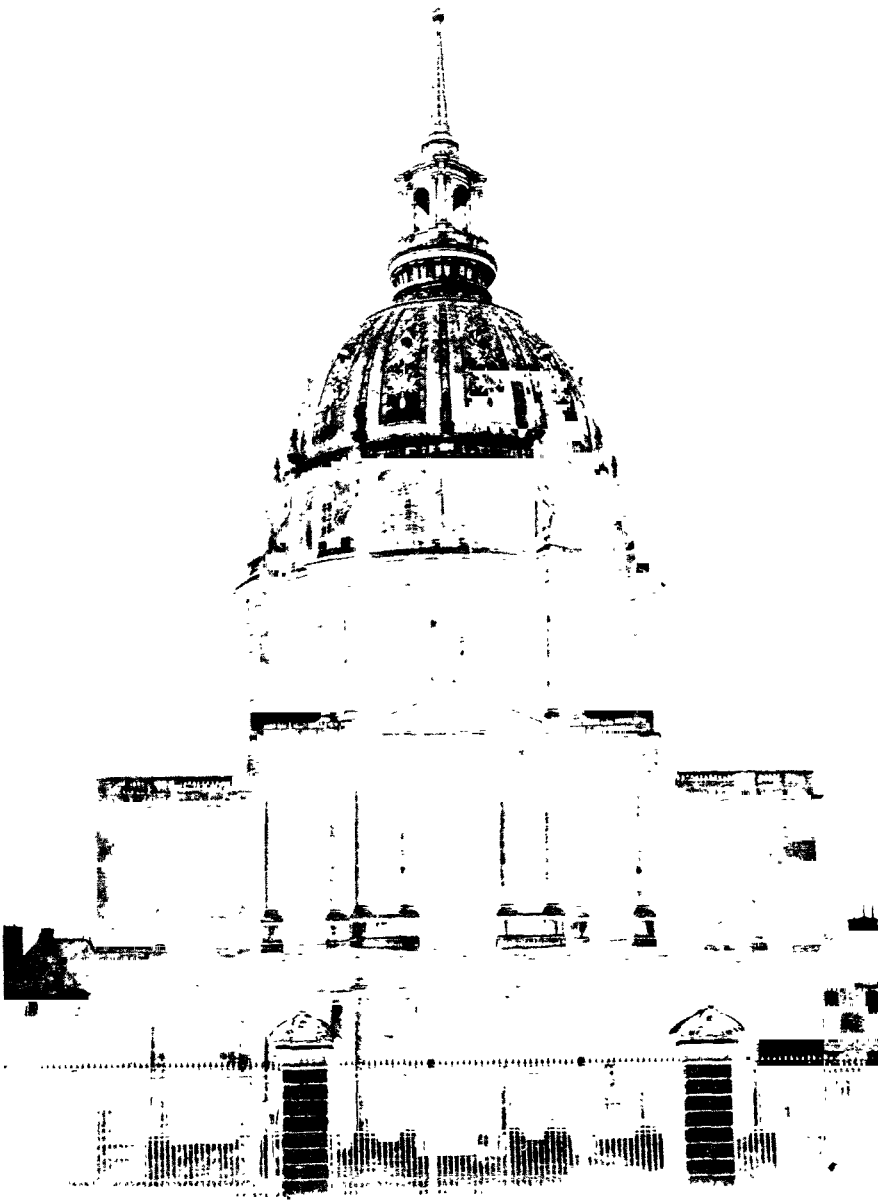
CHURCH OF THE SORBONNE, PARIS, 1035-53. ELEVATION TO COURT

An example of pyramidal composition terminated by dome and lantern. (Le Mercier, *Architect.*)



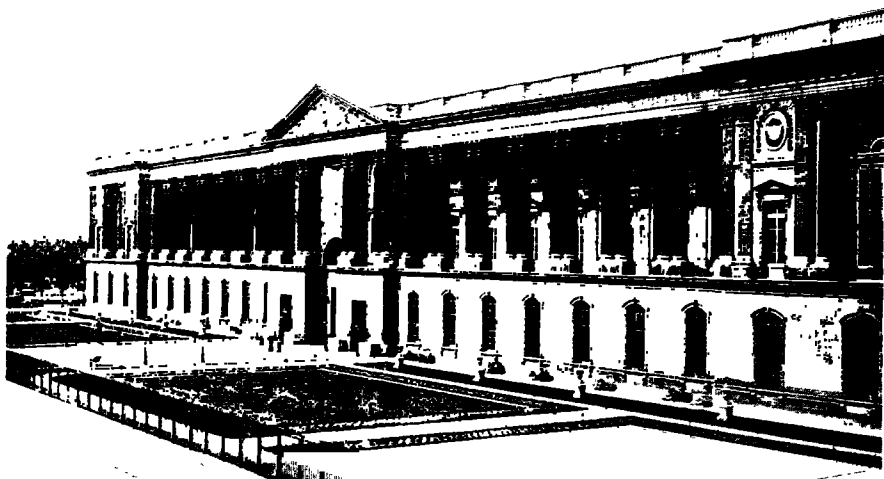
THE CHATEAU, MAISONS-LAFITTE, 1642-51. GARDEN FRONT

A grouping of three pavilions accentuated by roof treatment and piquancy of silhouette. (F. Mansart, *Architect.*)



SECOND CHURCH OF THE INVALIDES, PARIS, 1692-1704. AN EXAMPLE OF MONUMENTAL COMPOSITION IN WHICH ORDERS SUPERIMPOSED FORM THE SUBORDINATE ELEMENTS OF THE MASSING

The dome and lantern typify the Baroque manner of the late seventeenth century. (J. H. Mansart, *Architect*.)



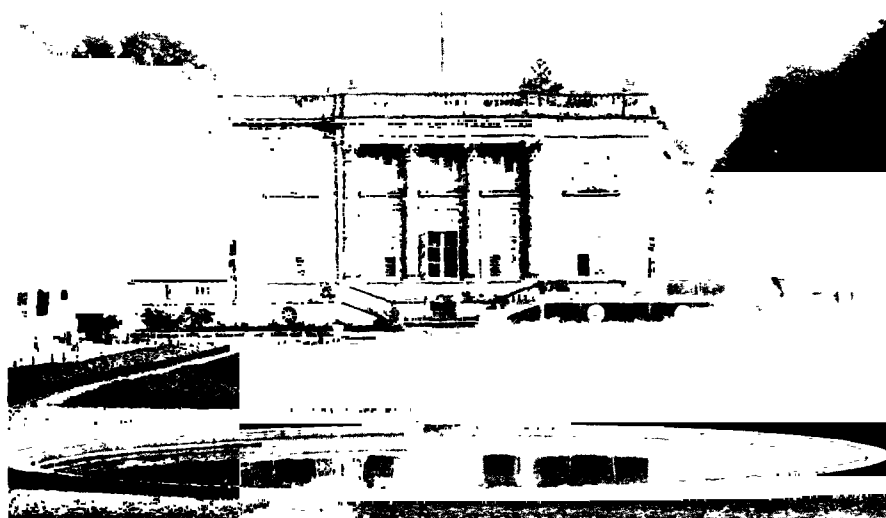
THE LOUVRE, PARIS, 1667-74. EAST FRONT. A GIANT COLONNADE OF COUPLED COLUMNS SUPPORTED ON A BASEMENT STOREY
This composition is typically French. (Claude Perrault, *Architect.*)



GOVERNMENT PALACE, NANCY, 1750-57. SCREENS FORMED AS HEMICYCLES TO ENCLOSE AN IMPORTANT OPEN SPACE AT THE BEND OF A MAJOR AXIS
(Boffrand and Héré De Corny, *Architects.*)



VERSAILLES. ENTRANCE FRONT. A GROUPING RESULTING FROM THE DEVELOPMENT OF THE AVENUE TYPE OF PLAN



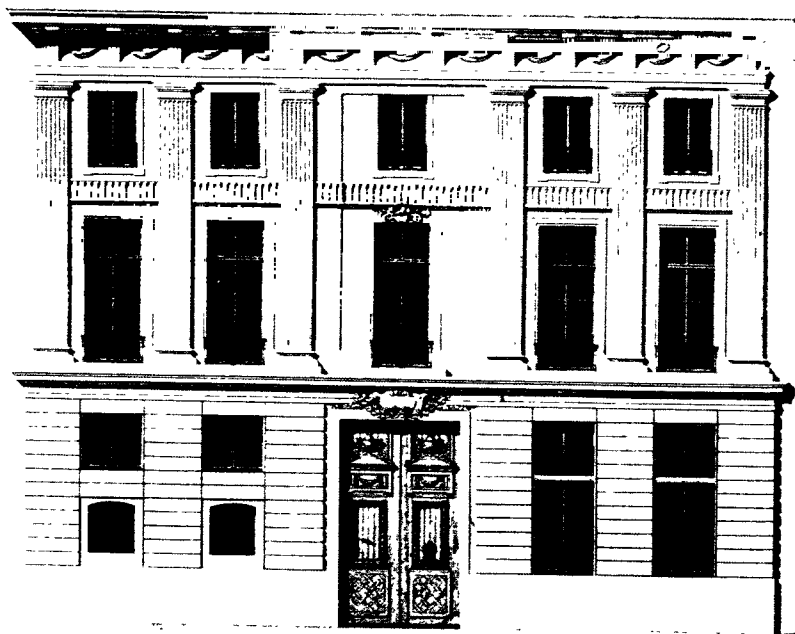
THE PETIT TRIANON, VERSAILLES, 1762-8. AN EXAMPLE OF ENGLISH INFLUENCE ON FRENCH ARCHITECTURE IN THE THIRD QUARTER OF THE EIGHTEENTH CENTURY

Simple silhouette resulting from predominance of horizontal lines. Balustrades and cornices to window heads aid the pavilion character. The centre treatment of four Corinthian columns forms the focal point. (J. A. Gabriel, *Architect*.)



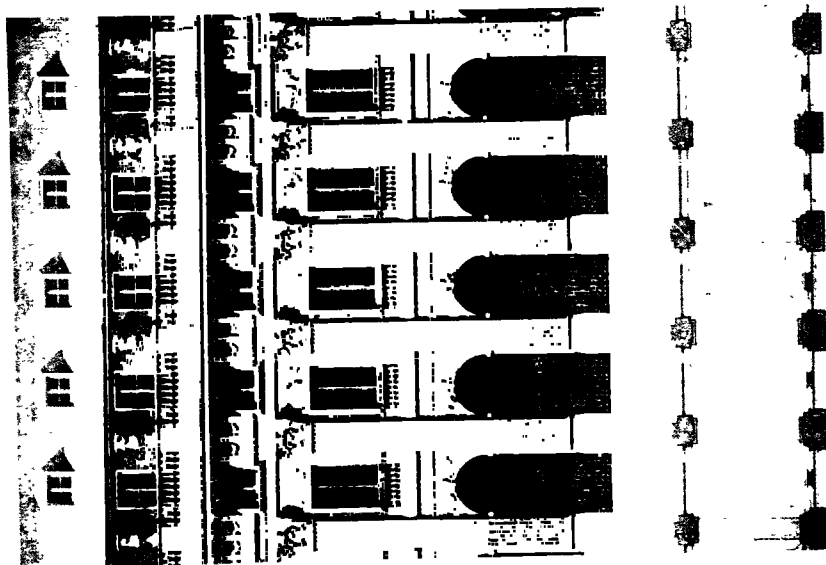
HÔTEL RUE ST. DENIS, PARIS. STYLE LOUIS XV

Three-part vertical composition subdivided horizontally to mark floors. Prominence given to centre portion by circular treatment.



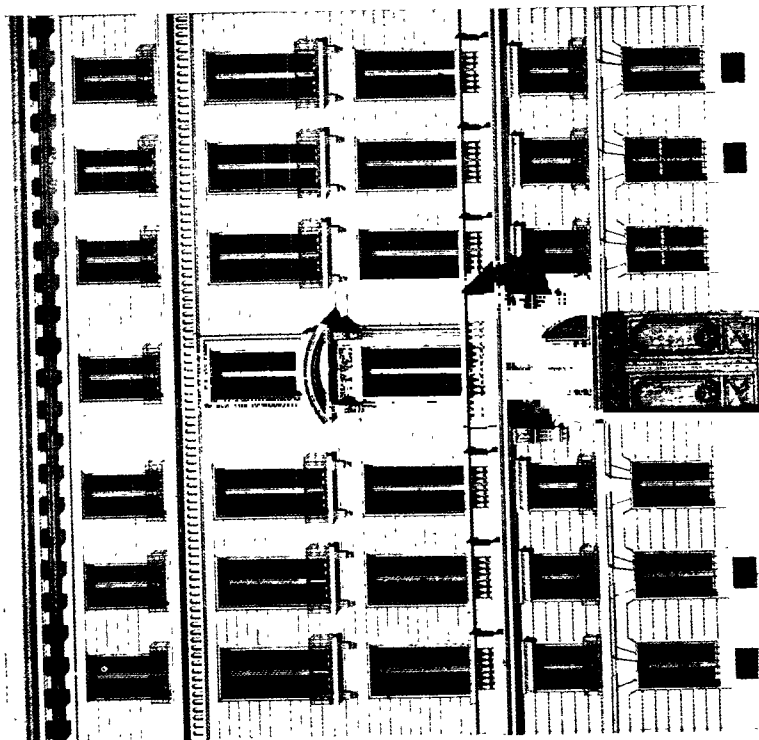
HÔTEL RUE DE FRANCE, PARIS. STYLE LOUIS XVI

Elevation showing prominences given to principal apartments. The adoption of an order for this purpose divides the front into two parts, namely, base containing two floors, and order containing two.



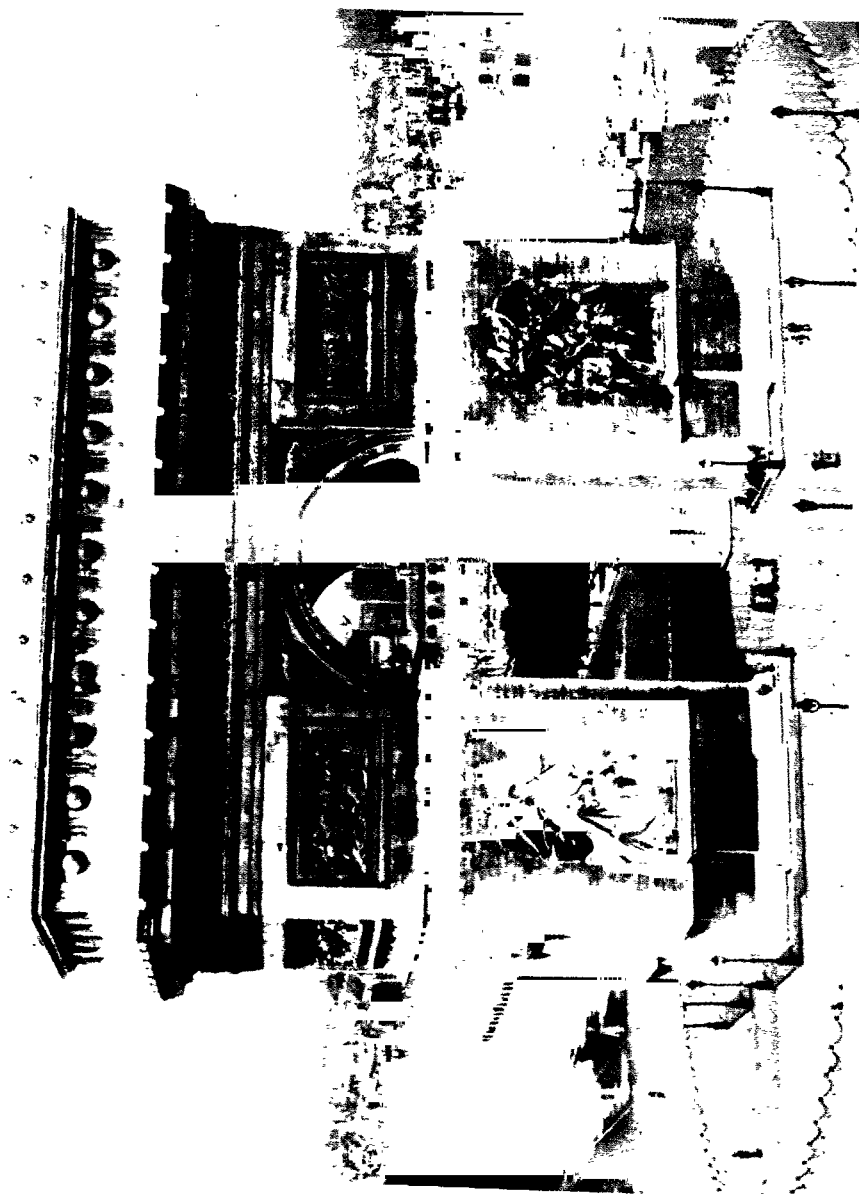
PALAIS ROYAL, PARIS, STYLE LOUIS XVI

Multiple-storied elevation combined within a giant order. Derived from a building at Turin.

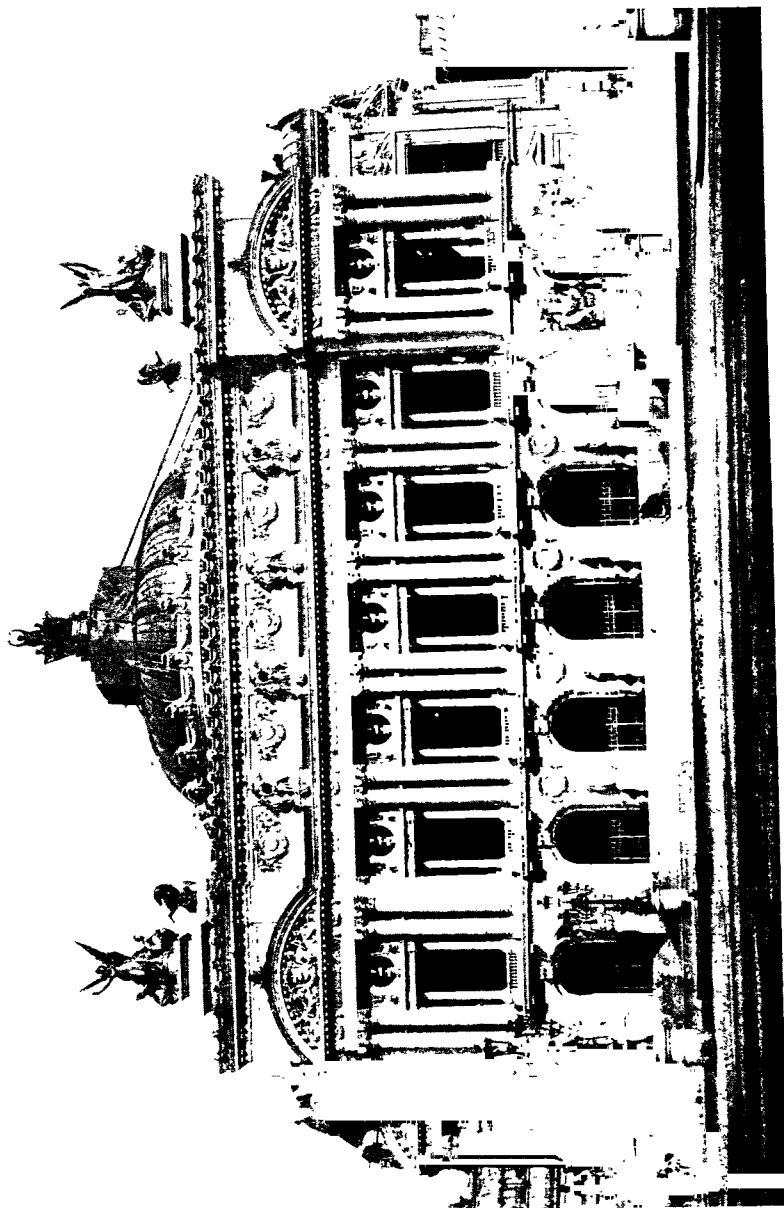


HÔTEL D'ENTRAGUES, RUE DE TOURNON, PARIS, STYLE LOUIS XVI

A façade in which horizontal subdivisions at appropriate levels emphasize the principal floors.

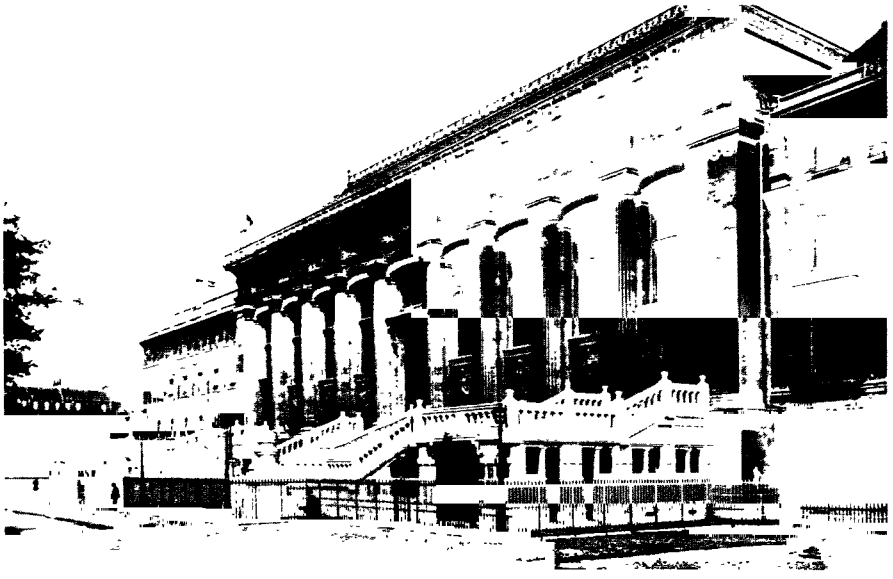


ARC DE TRIOMPHE, PARIS. ASTYLAR TREATMENT OF A ROMAN THEME.
(*Architects* : Chalgrin and others.)

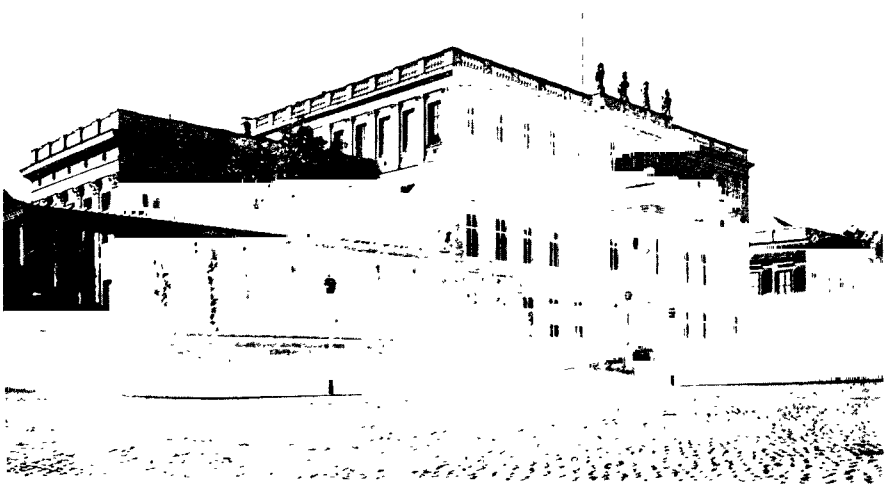


THE OPÉRA, PARIS. STYLE OF THE SECOND EMPIRE. AN ELEVATIONAL TREATMENT RECALLING THE ITALIAN BAROQUE OF THE SEVENTEENTH CENTURY

A skilful assemblage of historical motifs. Composition based on three-fold Vignolian composition of base, order storey and attic. This front considered to be one of the principal contributions of nineteenth-century architecture. (Charles Garnier, *Architect*.)



PALAIS DE JUSTICE, PARIS. AN EXAMPLE OF FRENCH NEO-GREC BY LOUIS DUC
The break from rigid classicality is seen in the expression of structural curves and the monumental stairway.



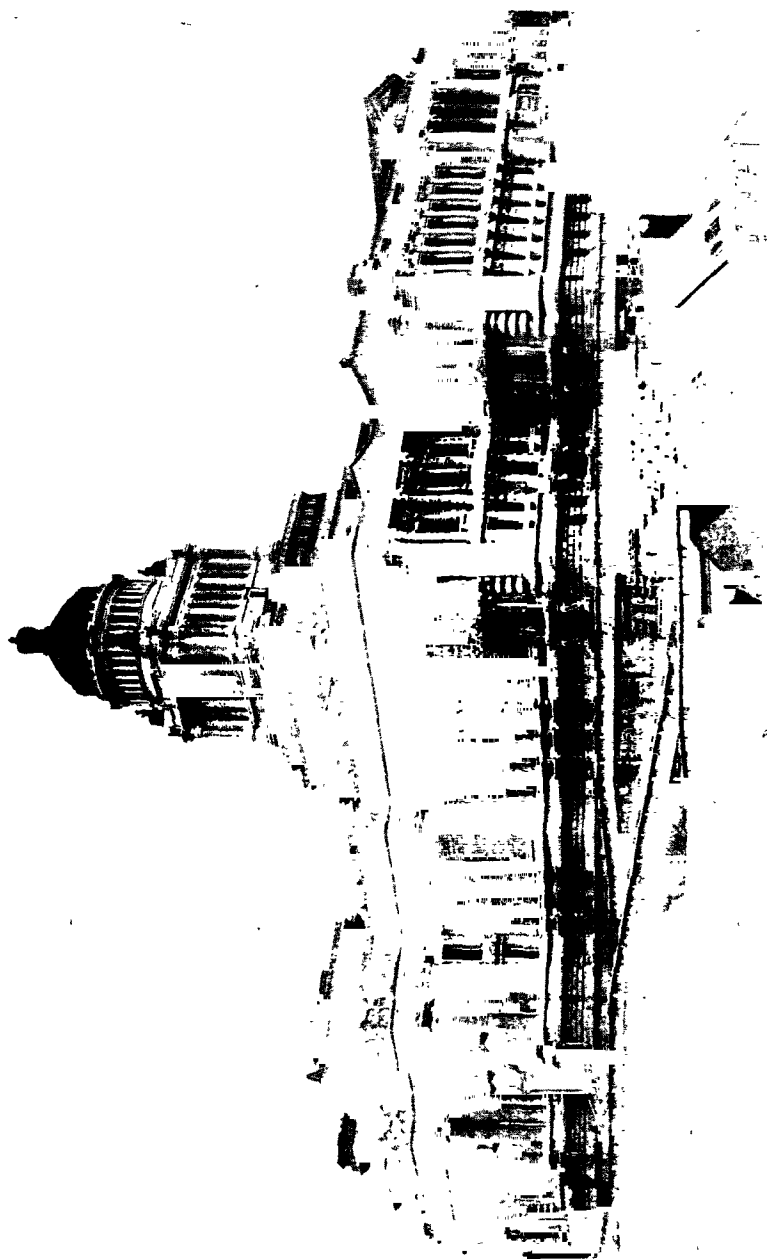
ROYAL PALACE, BERLIN. EARLY NINETEENTH-CENTURY CLASSIC ARCHITECTURE
A two-part composition, namely, main mass and appendage. The classical portico emphasizes the main entrance and finds a pleasing echo in the subordinate screen.



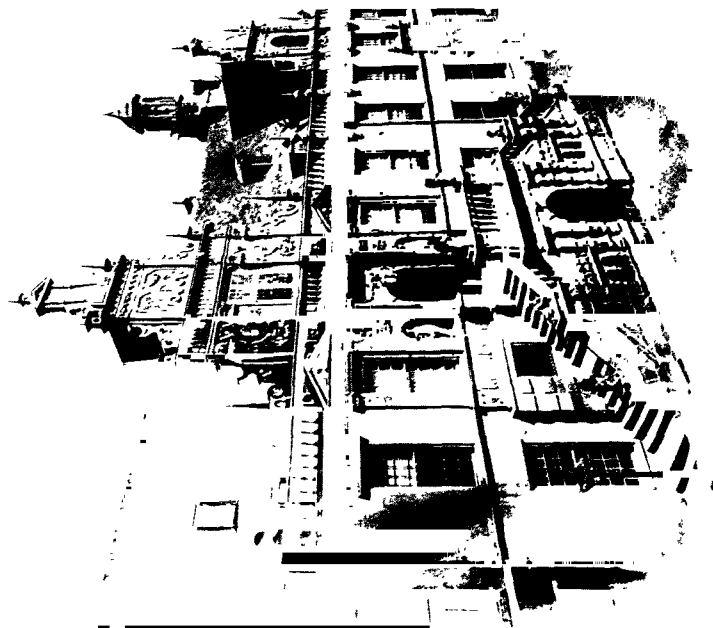
THE RATHAUS, MUNSTER, WESTPHALIA. PYRAMIDAL COMPOSITION OF WINDOWS
IN GABLE FORMATION MASKS STEEP-PITCHED ROOF (SIXTEENTH CENTURY)



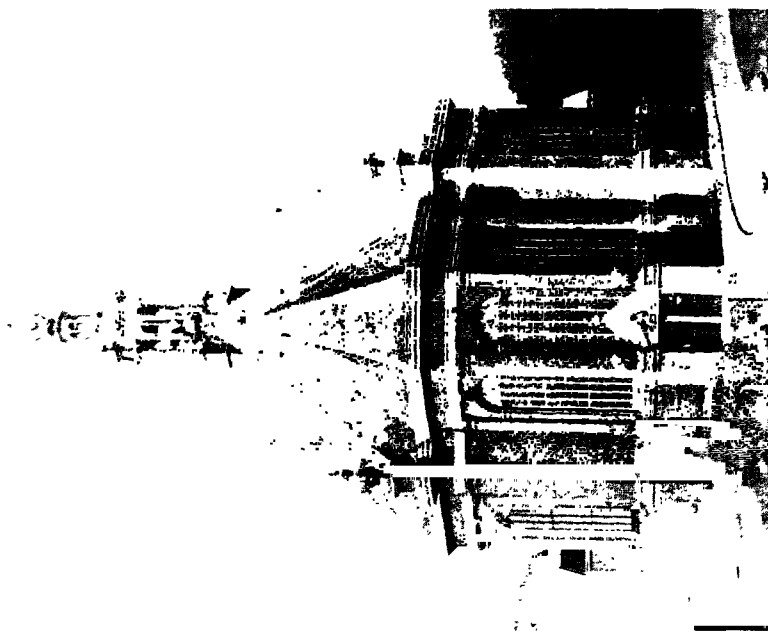
THE CASTLE, HEIDELBERG. CLASSICAL DETAILS DERIVED FROM VENETIAN BUILDINGS, SHOWING ATTEMPTS OF EARLY CLASSICAL ARCHITECTURE IN GERMANY



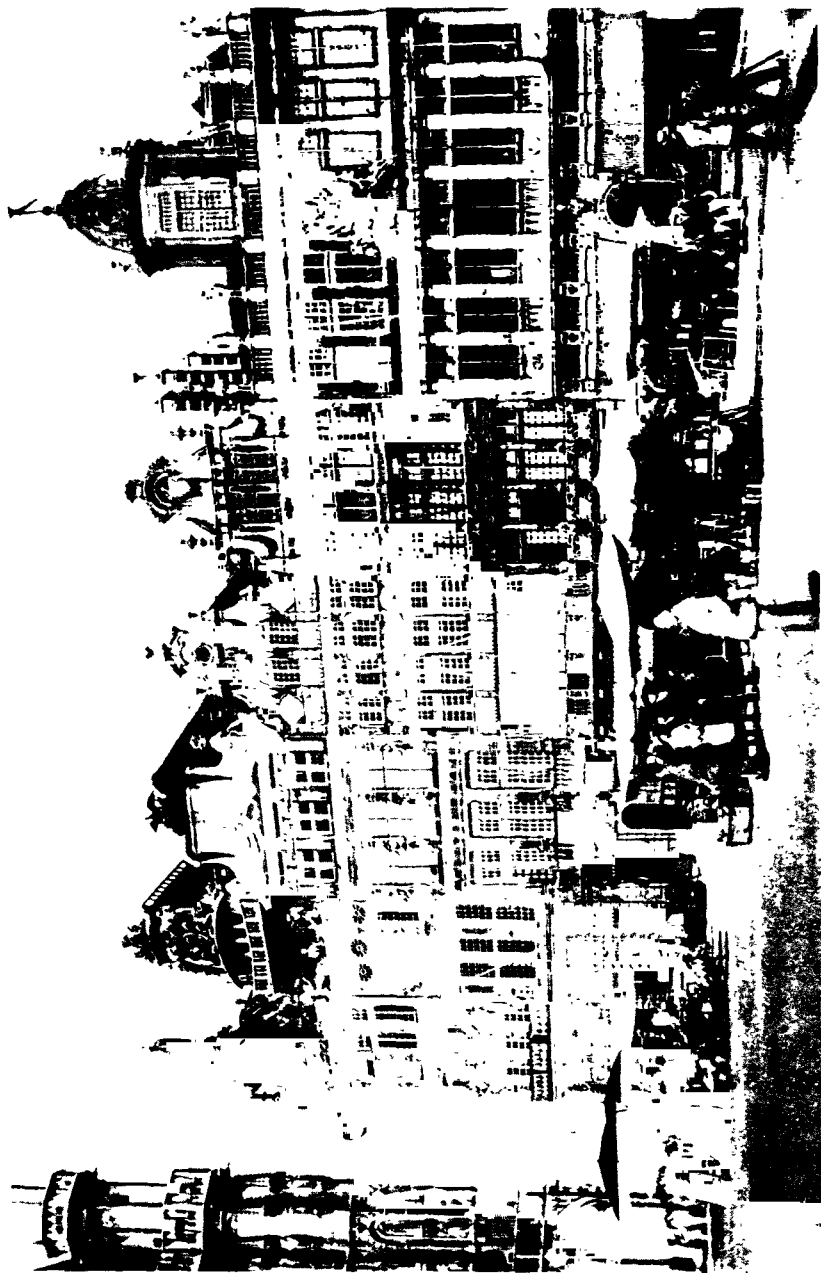
PALAIS DE JUSTICE, BRUSSELS. AN EXAMPLE OF NEO-GREC DESIGN ON THE GRAND SCALE
The façades are too diversified to be dominated by the central dome. (By Polaert, *Architect*.)



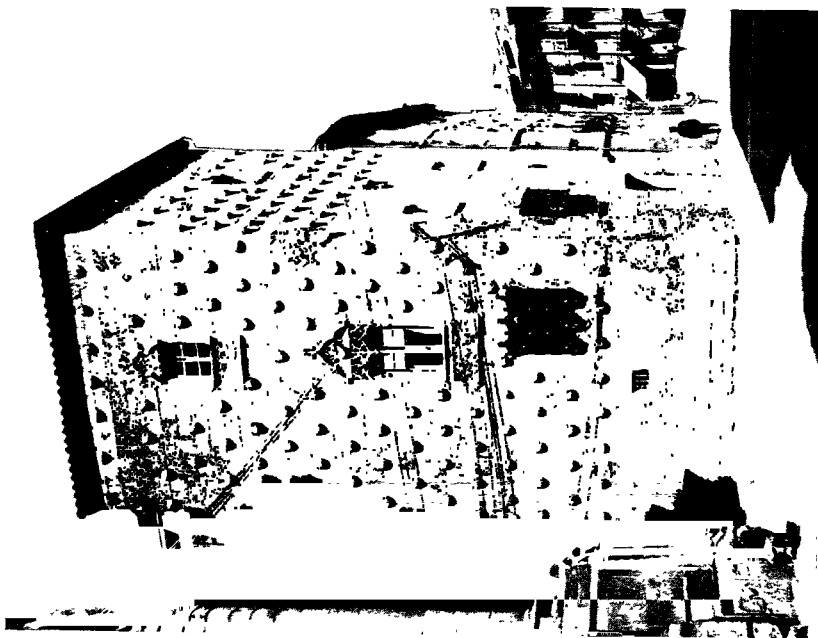
TOWN HALL, LEYDEN. MASK GABLE FORMING PYRAMID LINKED TO BASE BY EXTERNAL STAIRWAY



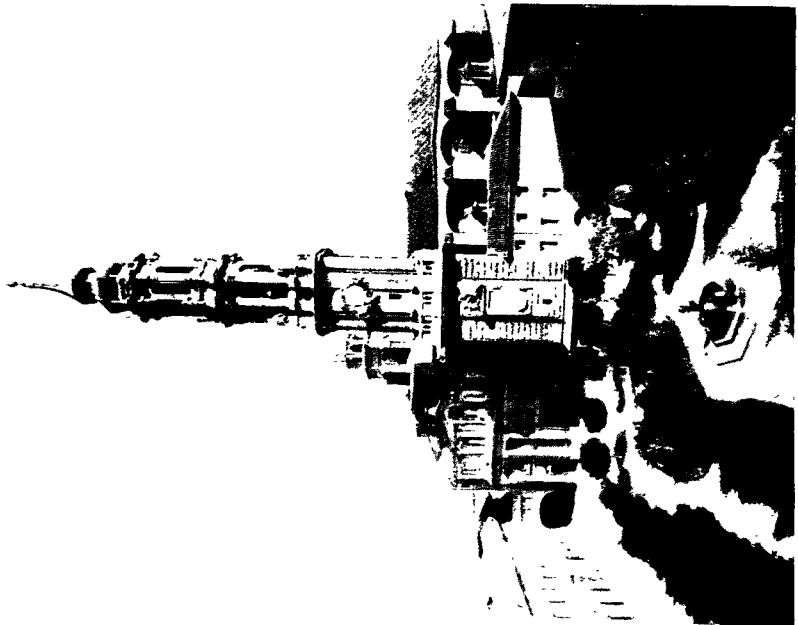
THE NEW CHURCH, THE HAGUE, 1654. EXTERIOR SUB-HOETTE DETERMINED BY STEEP-PITCHED ROOF RISING FROM WALLS WITHOUT INTERNAL SUPPORTS. PIQUANCY OF EFFECT OBTAINED BY DELICATE TREATMENT OF LANTERN.



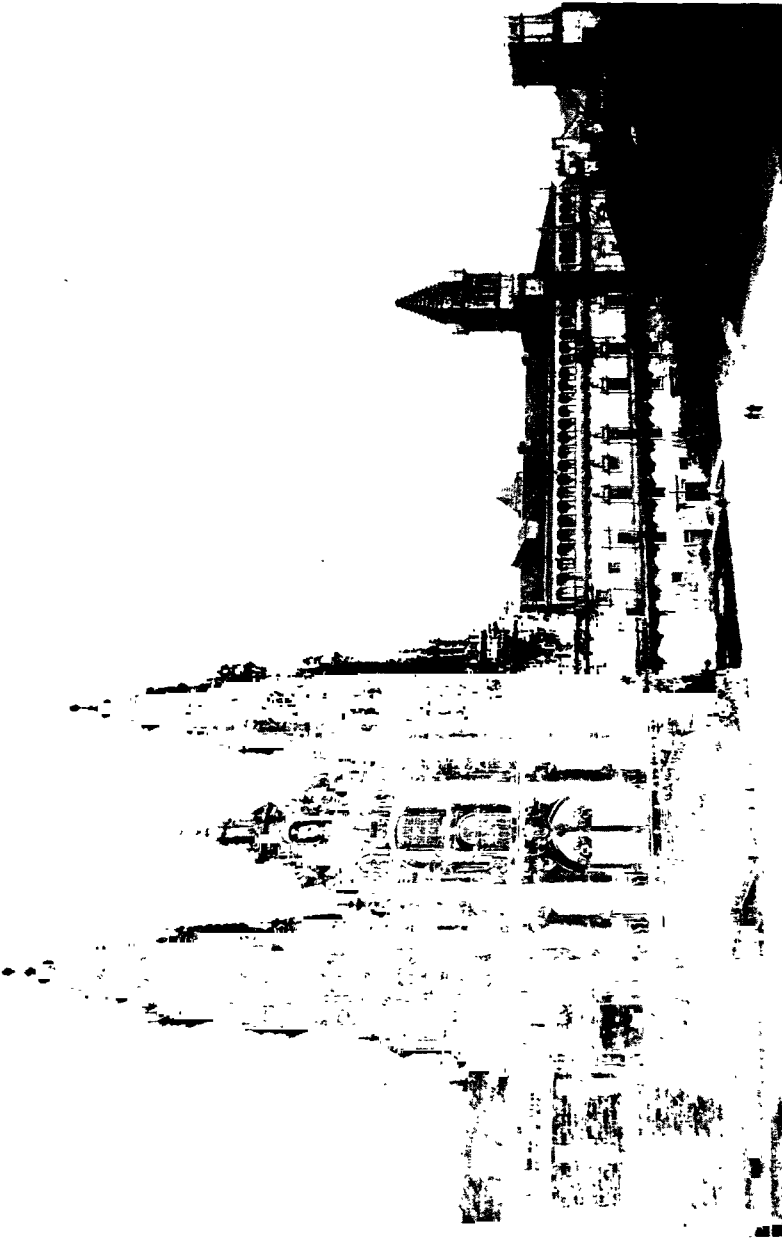
GRAND PLACE, BRUSSELS. EXAMPLES OF FINESTRACTION WITH WALL SURFACE REDUCED TO A MINIMUM



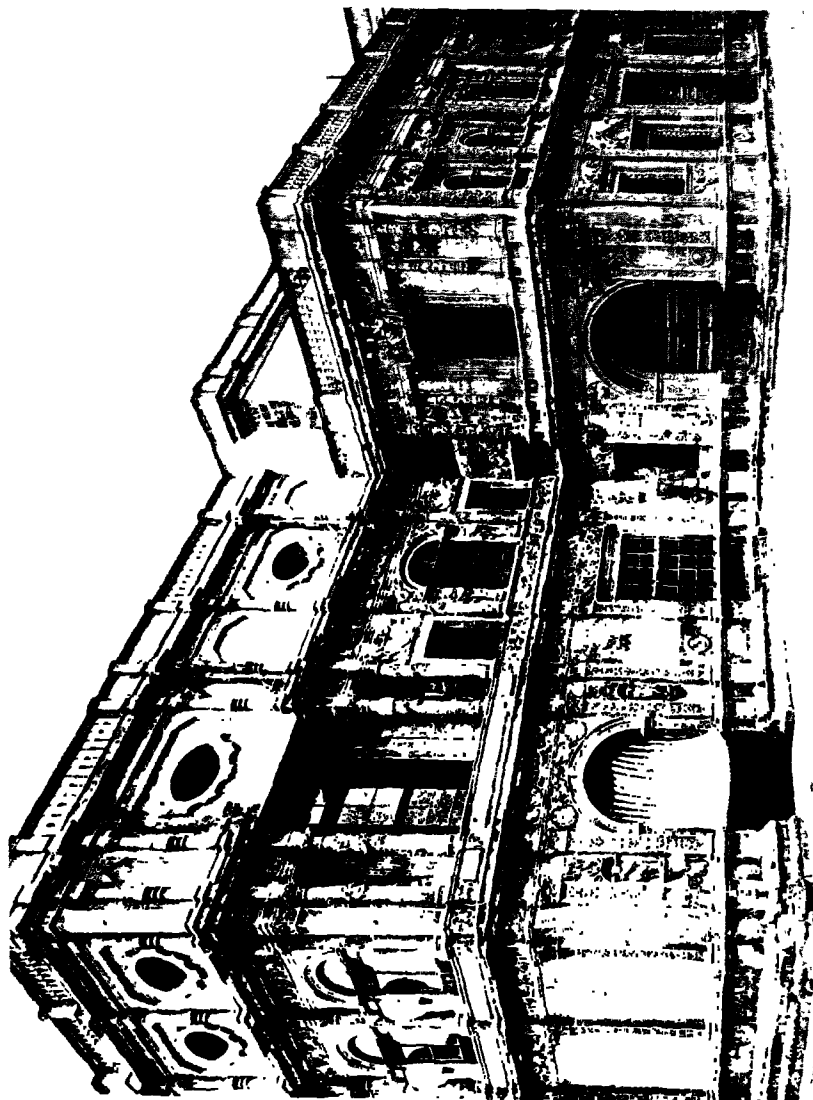
CASA DE LAS CONCHAS, SALAMANCA. GOTHIC STRUCTURE, SHOWING AFFINITY TO EARLY FLORENTINE STYLE



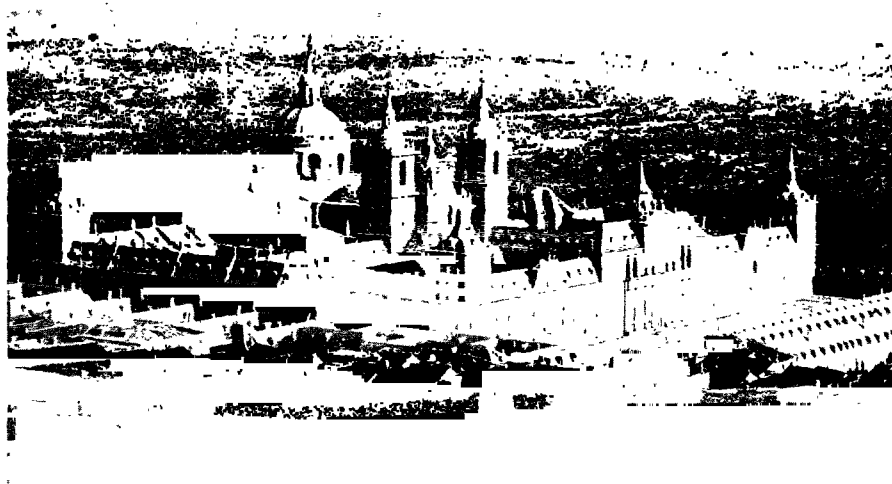
PLAZA DE LA SEO, SAGOSSA. CAMPANILE DESIGNED IN FOUR STAGES, EACH ONE DIMINISHING



FAÇADE OF CATHEDRAL, SANTIAGO DE COMPOSTELLA, GOTHIC. PRINCIPLES OF COMPOSITION EXPRESSED IN TERMS OF RENAISSANCE DETAIL

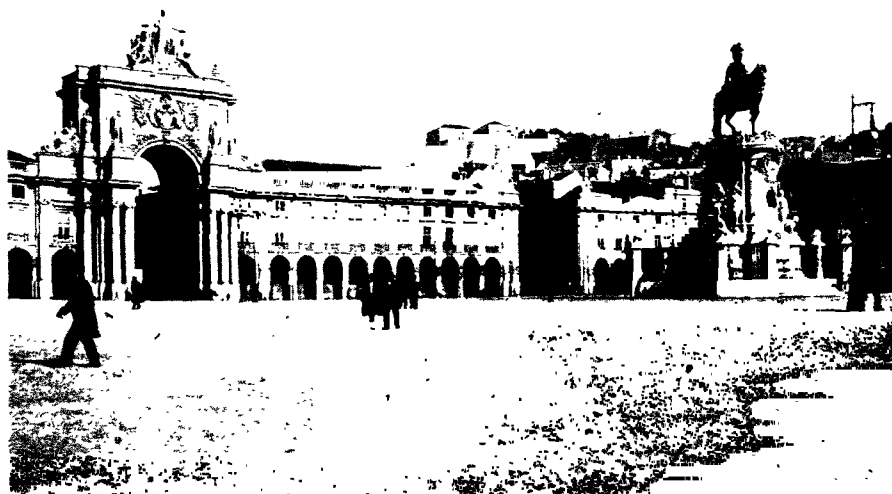


TOWN HALL, SEVILLE. AN EARLY EXAMPLE OF THE PLATYRESQUE STYLE DERIVED FROM FIFTEENTH-CENTURY ITALIAN BUILDINGS

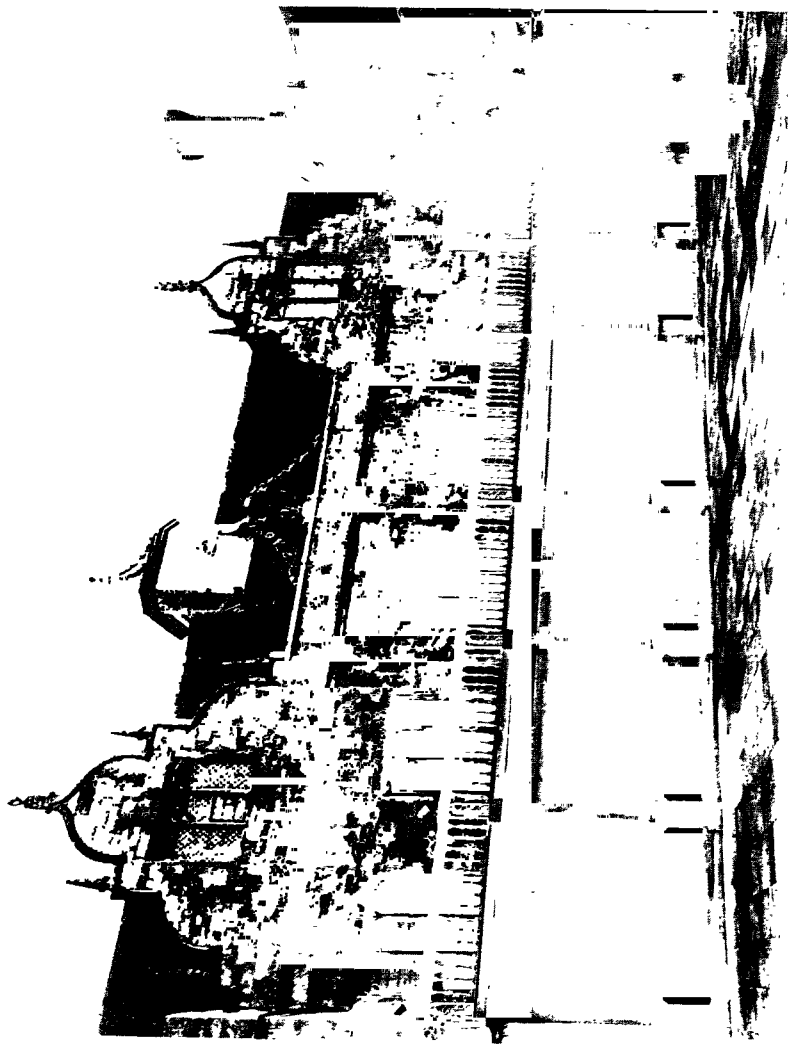


THE ESCURIAL, MONASTERY-PALACE. A CATHEDRAL FRAMED BY BUILDINGS OF MONASTIC TYPE

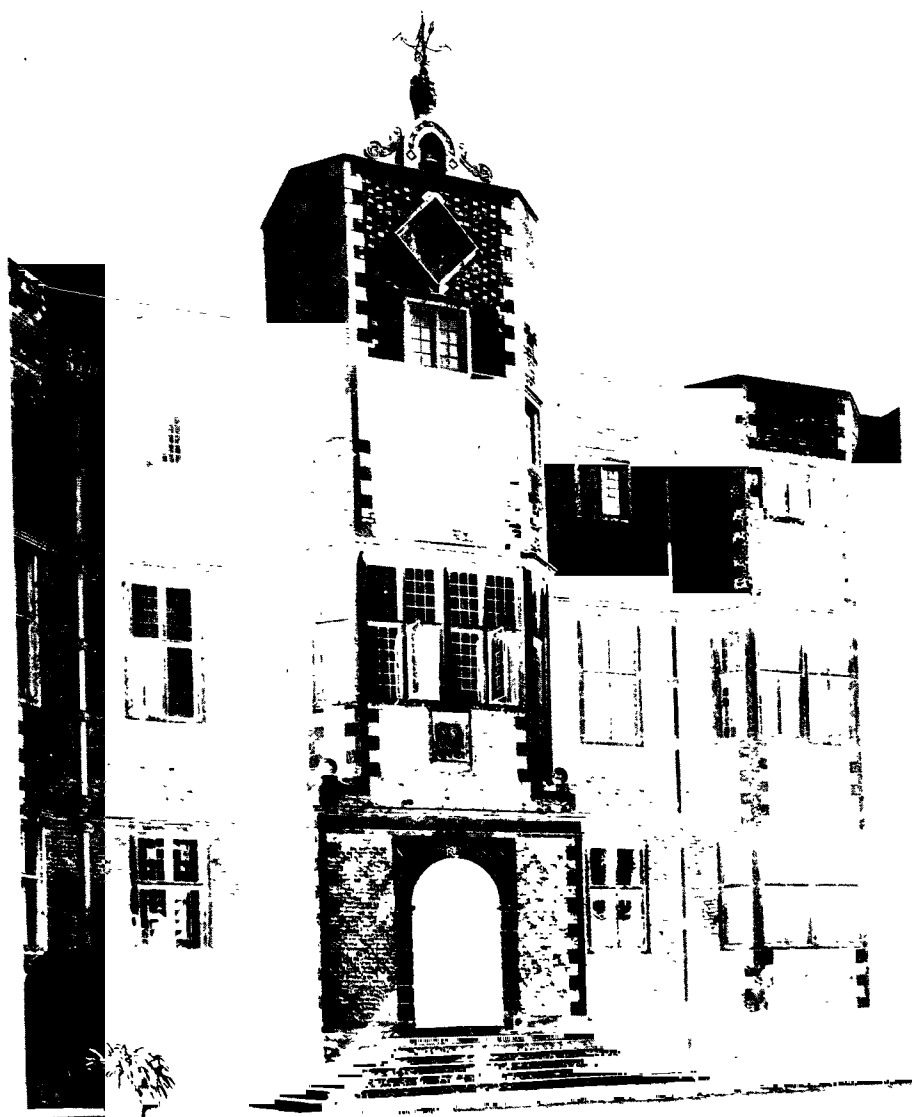
Contrast of silhouette afforded by dome and campanili rising above enclosure.



LISBON. GRAND APPROACH TO THE CITY FROM THE RIVER TAGUS. EIGHTEENTH CENTURY
Triumphal arch forming central feature of façades to piazza.

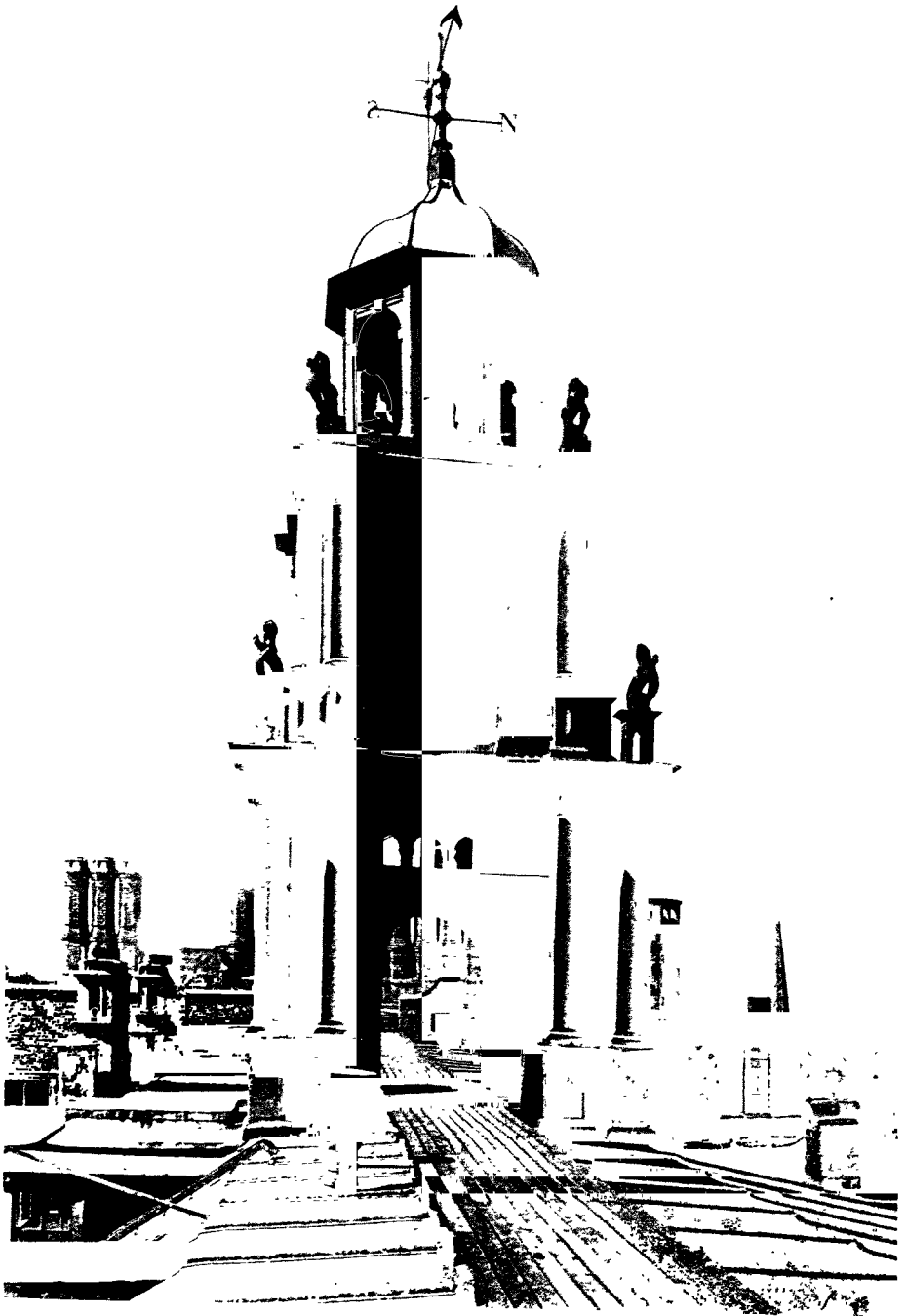


KNOLE, KENT, A.D. 1605. CURVILINEAR GABLES AND MEDIEVAL DETAILS CONTRASTING WITH OPLON LOGGIA SUPPORTED ON IONIC COLUMNS



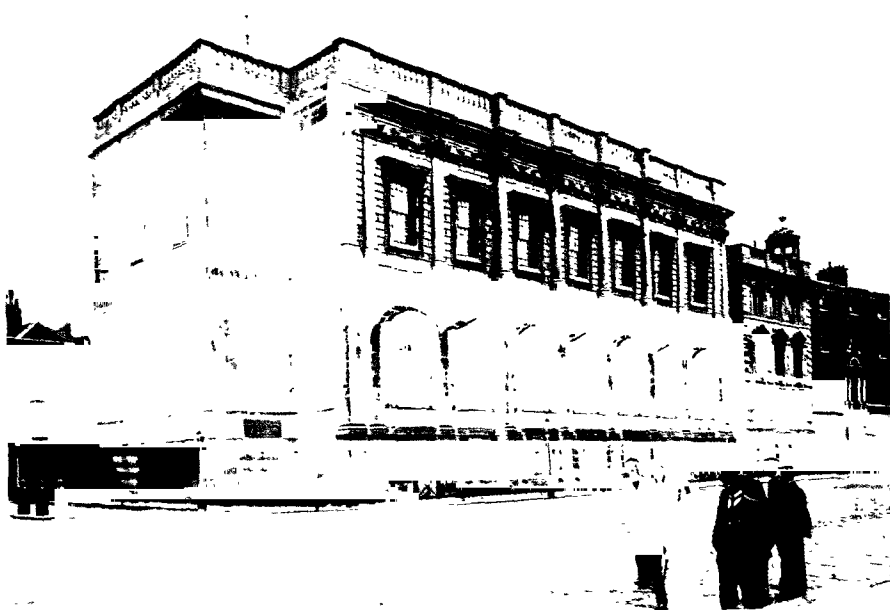
QUENBY HALL, LEICESTERSHIRE. A TYPICAL ELIZABETHAN COMPOSITION FOR AN ENTRANCE FRONT

The porch, placed between two bay windows, is carried up to form a central tower with clock and weather-vane.



HATFIELD HOUSE, HERTS, 1607-1612. DETAIL OF LANTERN

Composition of three horizontal parts—the two lower being a superimposition of orders. The crowning octagon is open to contain the bells.

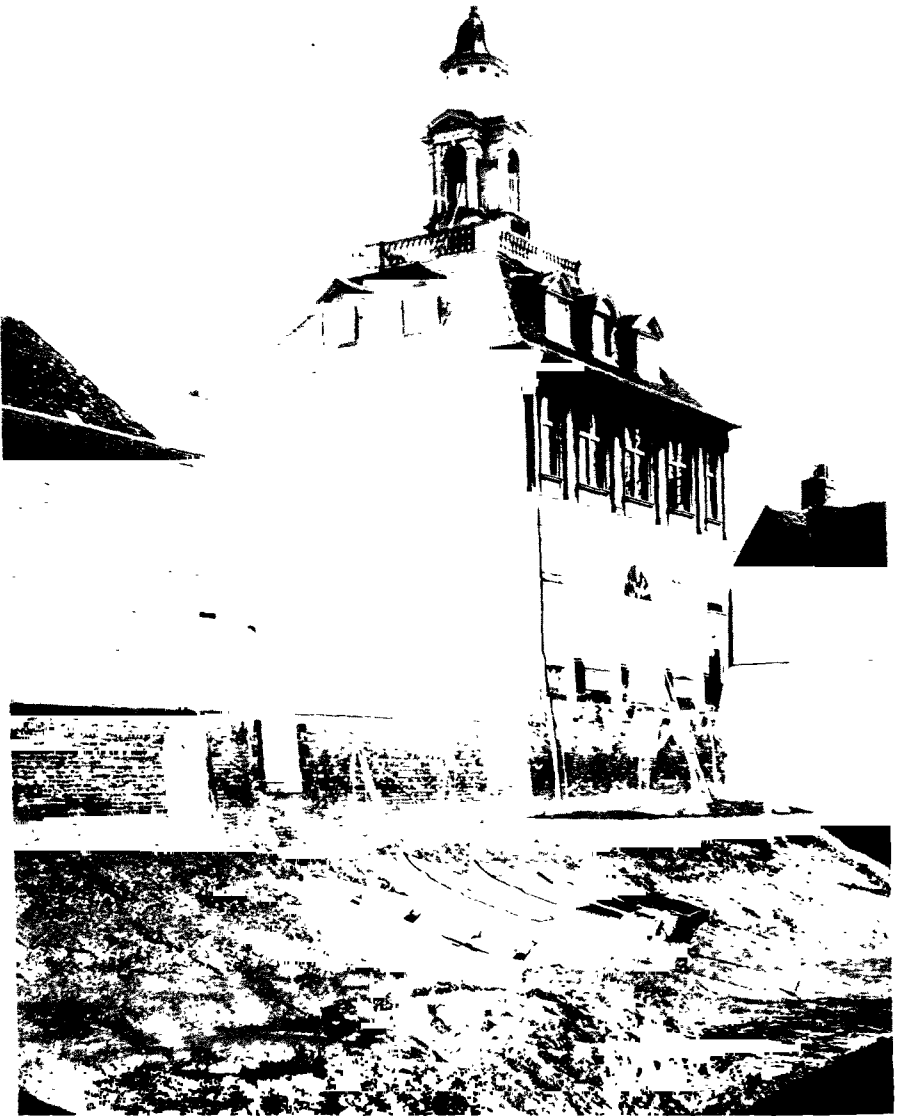


THE BANQUETING-HALL IN WHITEHALL, LONDON, A.D. 1619-21. THE EARLIEST
EXAMPLE OF ACADEMIC ARCHITECTURE IN ENGLAND

The main portion of the front is subdivided into three vertical masses by the skilful adjustment of the four central columns and the straight-sided pilasters on either side. (Inigo Jones, *Architect*.)



KIRBY HALL, NORTHAMPTONSHIRE. VIEW SHOWING LATER ADDITIONS OF THE
EARLY SEVENTEENTH CENTURY, 1570 AND LATER
(John Thorpe, *Architect*)



THE CUSTOM HOUSE, KING'S LYNN, NORFOLK. LATE SEVENTEENTH CENTURY

Composition of one main mass terminating in a lantern of two stages. Design derived from Dutch examples. (Bell of Lynn, *Architect.*)



ST. PAUL'S CATHEDRAL, LONDON, 1675-1710. THE FINEST EXAMPLE OF BAROQUE ARCHITECTURE IN ENGLAND

Dome and western campanili inspired from Italian precedent. Effect obtained from contrast of vertical silhouette with broad horizontal mass below. (Sir Christopher Wren, *Architect*.)

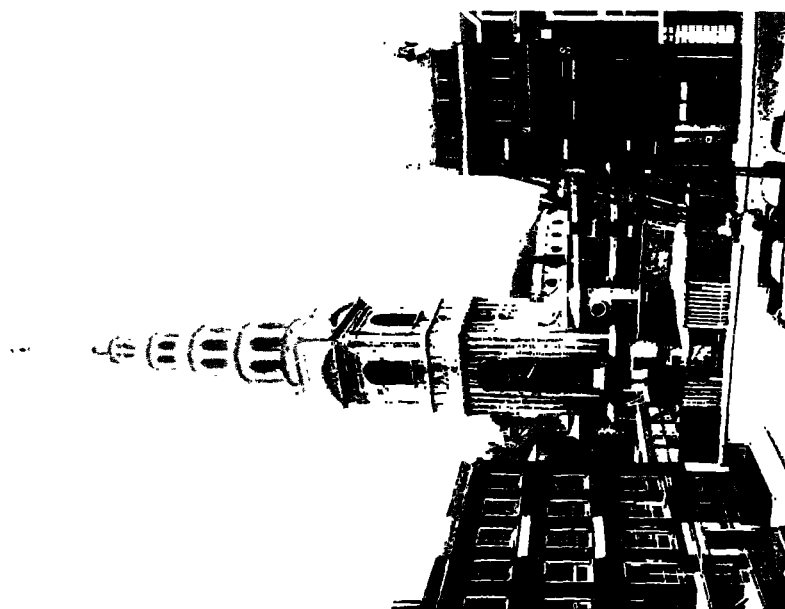


GREENWICH HOSPITAL, LONDON, A.D. 1661-67-1710. TWIN COMPOSITION HELD TOGETHER BY SILHOUETTE OF DOMES CONTRASTING WITH HORIZONTAL MASSES

(John Webb and Sir Christopher Wren, *Architects*.)



CHELSEA HOSPITAL. PLANNING ON THE GREAT SCALE.
The open central quadrangle is too deep to be entirely successful.
(Sir Christopher Wren, *Architect*.)



ST. BRIDE'S CHURCH, LONDON. RECTANGULAR TOWER
IN TWO MAIN STAGES, SUPPORTING NEILIKE-TAPERING
SPIRE. THE LATTER COMPOSED OF FOUR OCTAGONAL
STAGES
(Sir Christopher Wren, *Architect*.)



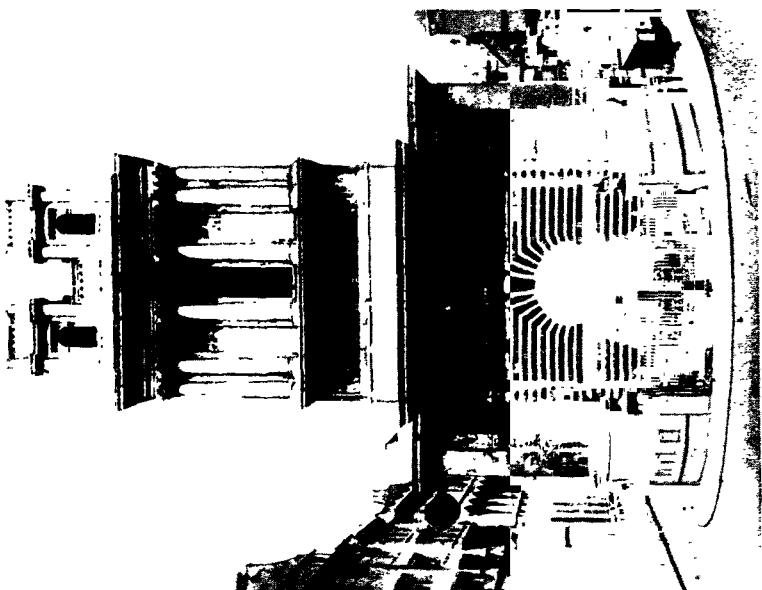
BLenheim, OXFORDSHIRE, A.D. 1705. ELEVATION TO ITALIAN GARDEN

Principal masses of building accentuated by treatment of silhouette at angles. (Sir John Vanbrugh, *Architect*.)

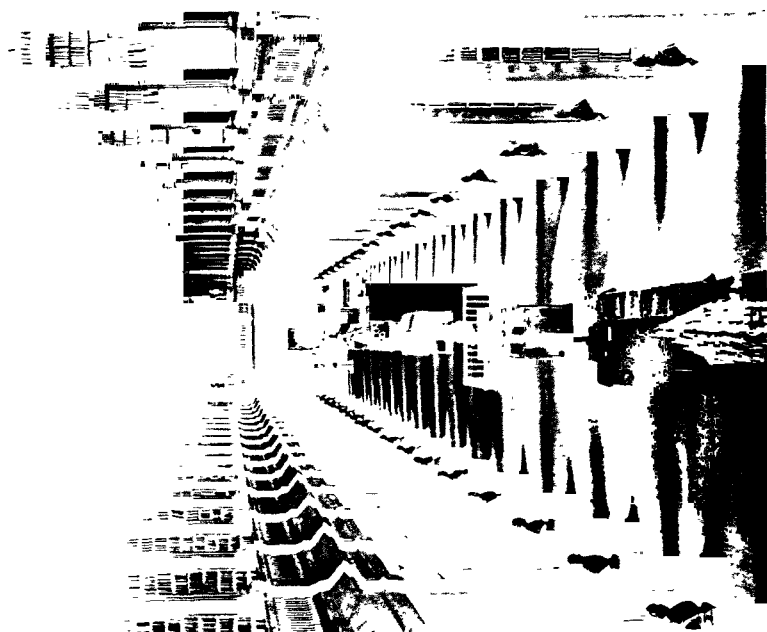


HAMPTON COURT PALACE, EAST FRONT, A.D. 1690 AND LATER. ORDONNANCE EMPLOYED TO FORM CENTRAL FEATURE CONTRASTING WITH ASTYLAR TREATMENT OF RECTANGULAR FAÇADE

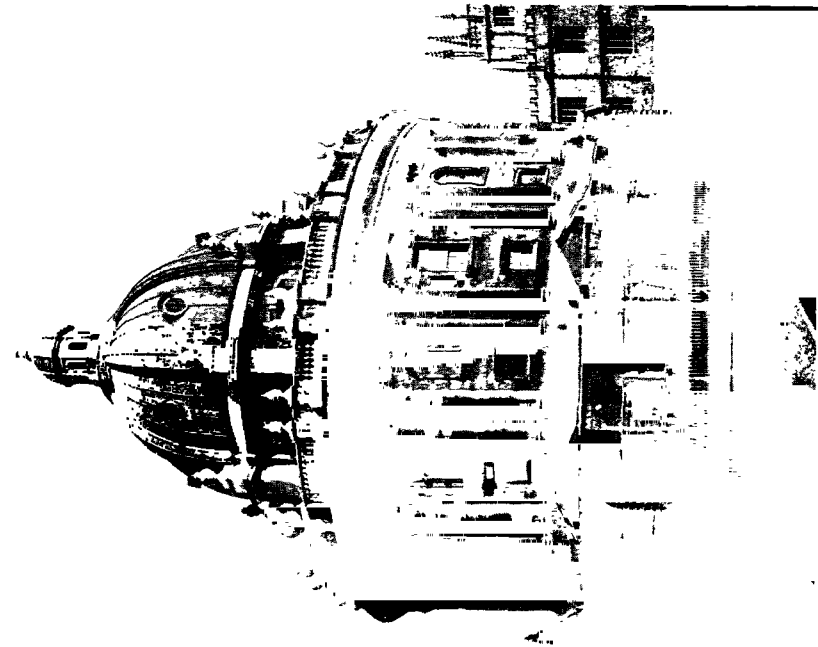
(Sir Christopher Wren, *Architect*.)



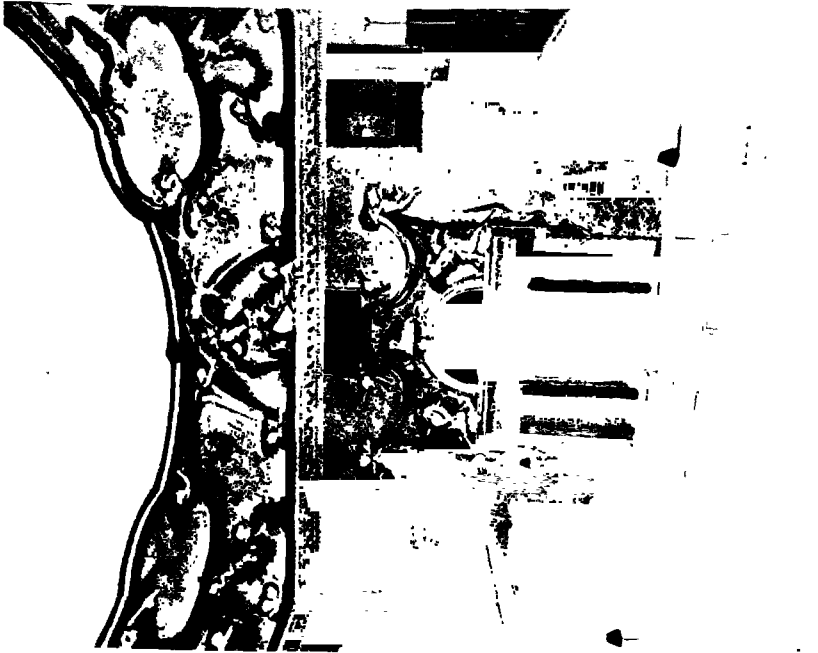
CHURCH OF ST. MARY WOOLNOTH, A.D. 1713-19.
TOWER-LIKE FRONTISPIECE. STRONG RUSTICATED BASE
SUPPORTING TWO GROUPS OF COLUMNS CROWNED BY
TWIN TURRETS.
(Nicholas Hawksmoor, *Architect.*)



TRINITY COLLEGE, DUBLIN. INTERIOR TREATMENT OF
LIBRARY IN TWO TIERS, BULFESS FORMATION OF PIERS
TERMINATING BOOK-CASE RECESSES AND SUPPORTING CURVED
CEILING
(Keene and Sanderson, *Architects.*)



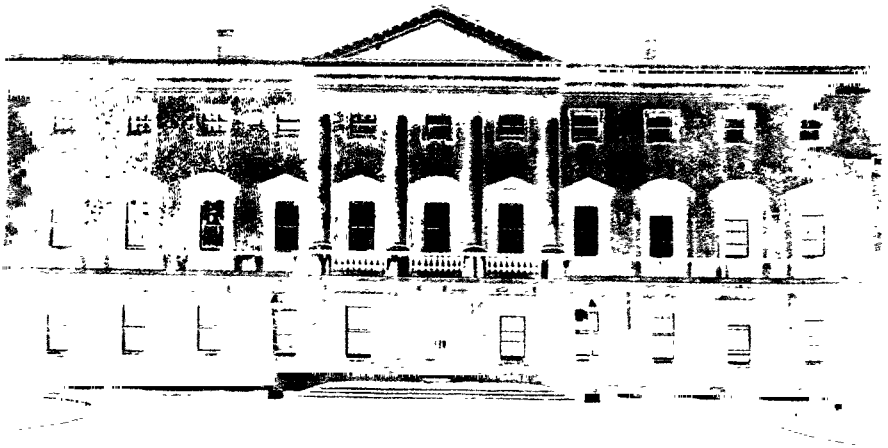
THE RADCLIFFE LIBRARY, OXFORD, A.D. 1737. CIRCULAR
THENE WITH DOME.
The strong rusticated base with pedimented projections forms a
podium to the columnar treatment of the façade. (James Gibbs,
-Architect.)



CHAPEL OF LYING-IN HOSPITAL, DUBLIN, 1730. BAROQUE
INTERIOR, WITH RICH CEILING LINKED TO VERTICAL SURFACE
AT ONE POINT BY TREATMENT OF WINDOW FORMING REFLECTS
TO ALTAR. (Richard Castell, -Architect.)



ROYAL CRESCENT, BATH, A.D. 1730. UNIFORMITY ACHIEVED BY REPETITION OF EQUALLY-SPACED GIANT ORDER. EFFECT ENHANCED BY SWEEP OF THE FAÇADE
(John Wood of Bath, *Architect.*)



LEINSTER HOUSE, DUBLIN, A.D. 1745. CENTRAL COLUMNAR FEATURE APPLIED TO ASIYLAR FAÇADE OF THREE STOREYS
(Richard Castell, *Architect.*)



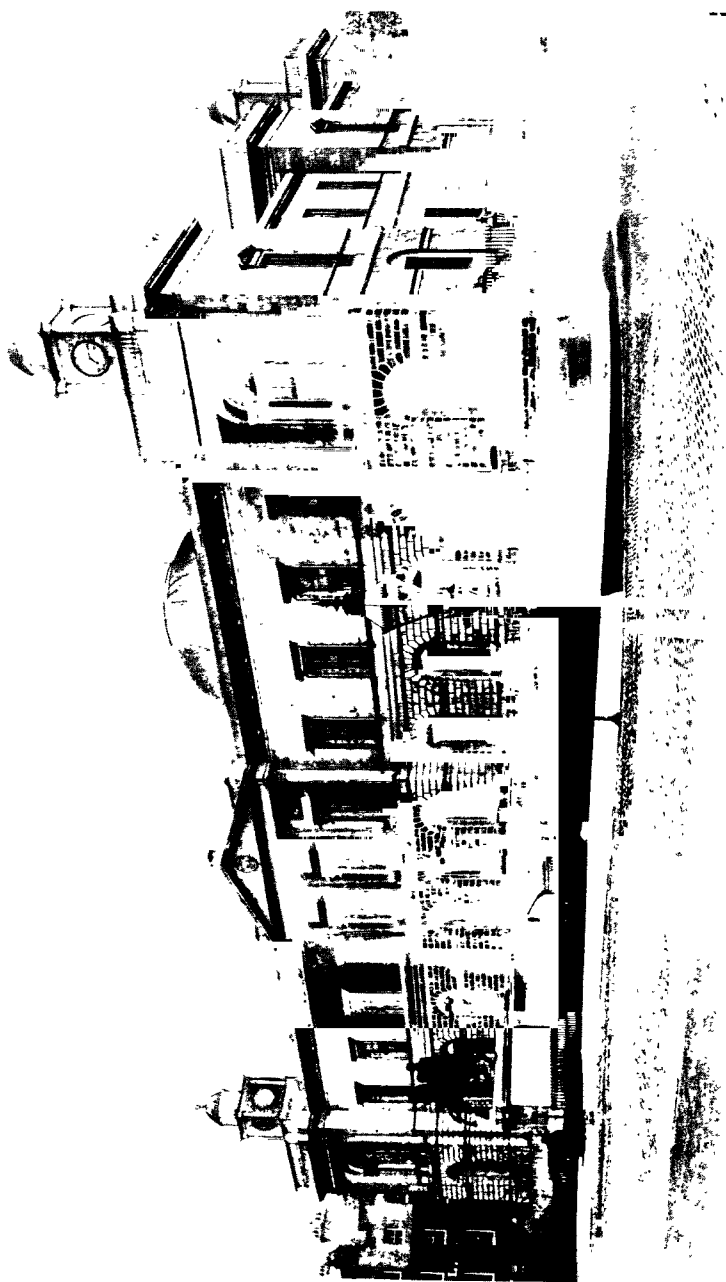
MARINO, CO. DUBLIN. THE GATEWAY

Pylons framing central opening repeated at each extremity to smaller scale. Close grouping of three openings. (Sir William Chambers, *Architect*.)

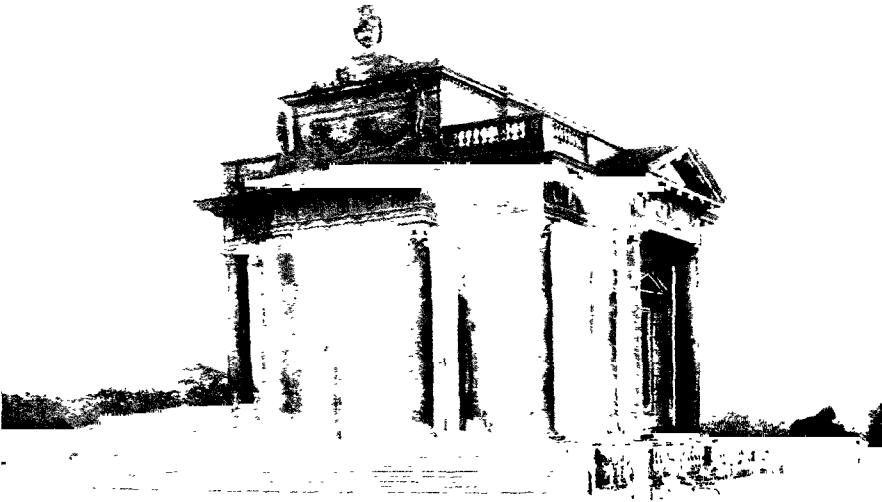


CHARLEMONT HOUSE, RUTLAND SQUARE, DUBLIN, A.D. 1763. BEFORE ALTERATIONS

Astylar elevation recessed within quadrant screen, entrance doorway forming focal point in base. (Sir William Chambers, *Architect*.)



THE GENERAL REGISTER HOUSE, EDINBURGH, A.D. 1772. CENTRAL FEATURE SUPPORTED BY ANGLE PAVILIONS
(Robert Adam, *Architect*.)



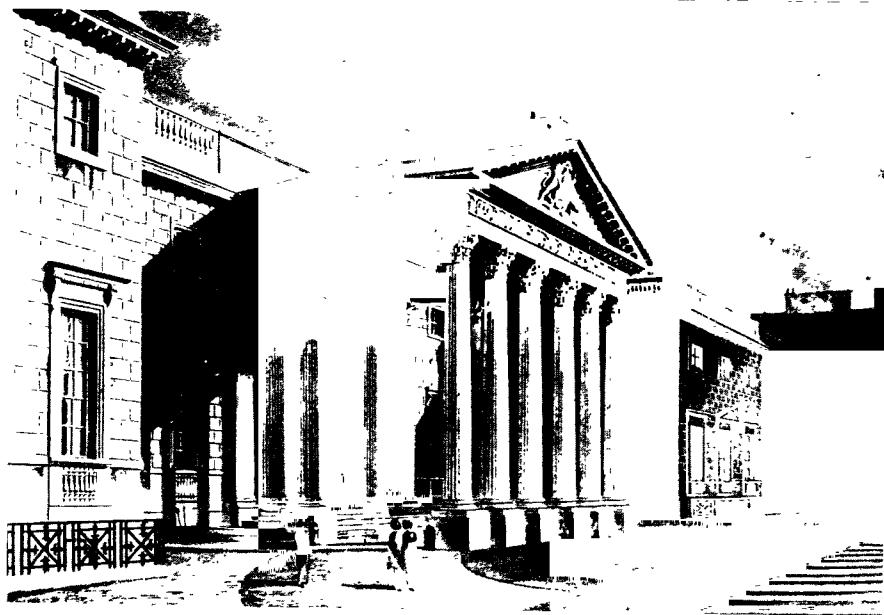
MARINO, CO. DUBLIN. THE CASINO

Elevation derived from Greek Cross plan with open loggias at angles. Repetition of free standing order unifies the ensemble. (Sir William Chambers, *Architect*.)



SOMERSET HOUSE, LONDON, A.D. 1776-86. ELEVATION IN TERRACED FORMATION

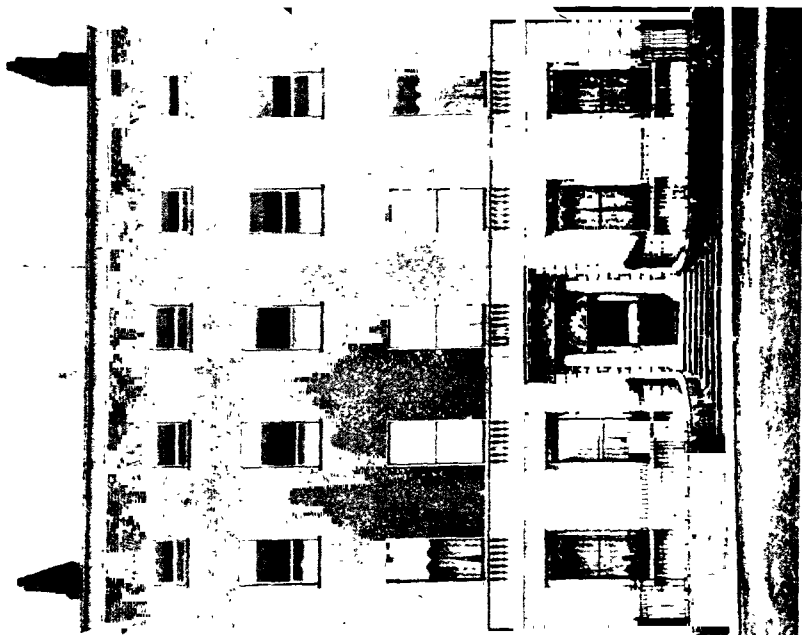
Long horizontal treatment contrasted with vertical pavilion and Palladian bridge motif. (Sir William Chambers, *Architect*.)



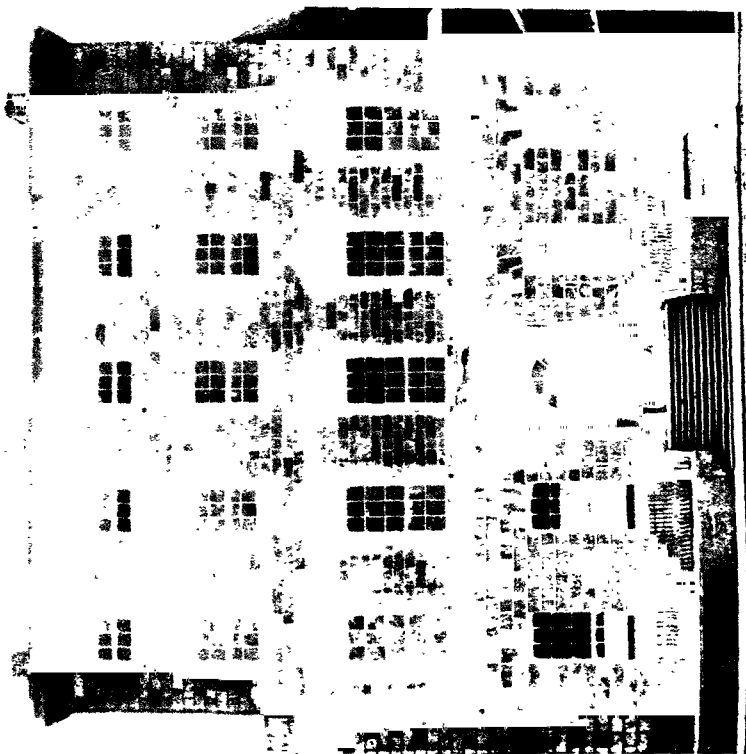
CARLTON HOUSE. NORTH FRONT, AS REMODELLED, 1784
Giant Corinthian order forming a porte-cochère between two wings. (Henry Holland, Architect.)



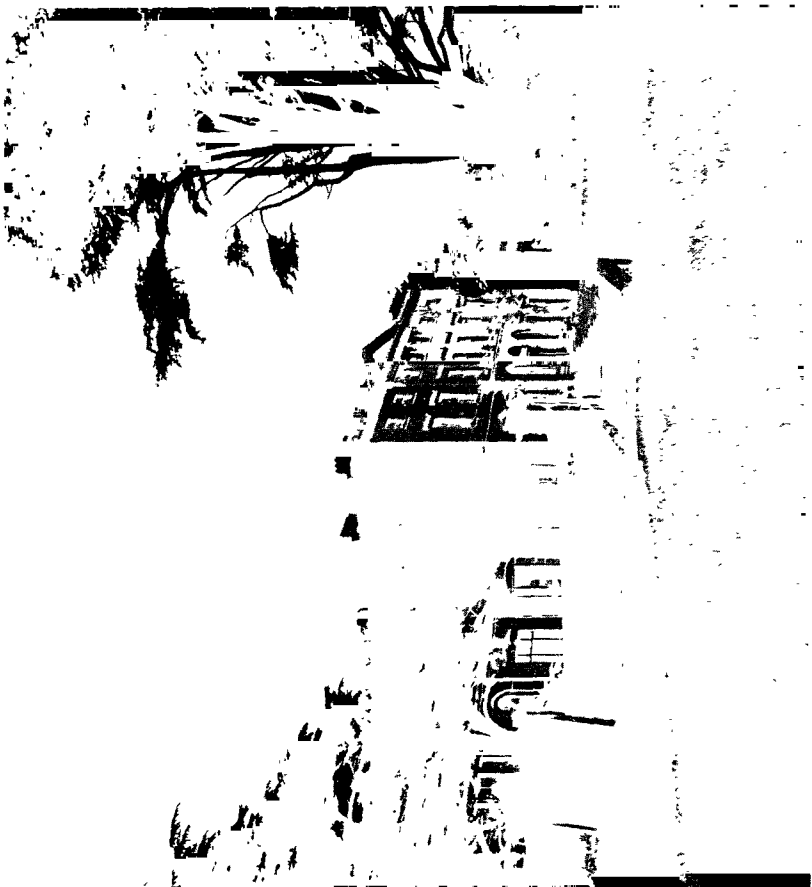
ALDBOROUGH HOUSE, PORTLAND ROW, DUBLIN, A.D. 1798. U-SHAPED PLAN
COMPOSITION, THE CENTRAL MASS BEING DOMINANT
The portico forms the focal point of the main front, but is too delicate for the purpose.



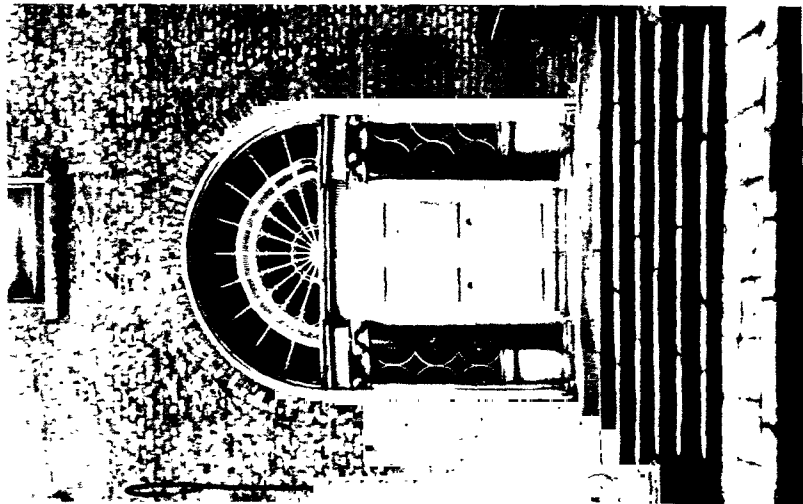
BELVEDERE HOUSE, DUBLIN, A.D. 1786. ASTYLAR TREATMENT OF TWO PARTS, STONE FOR BASE AND BRICK OVER. The delicate crowning cornice with flutes is a feature of eighteenth-century mansions in Dublin.



NO. 86, ST. STEPHEN'S GREEN, DUBLIN, A.D. 1738. ASTYLAR ELEVATION OF FOUR STORIES AND FIVE BAYS IN WIDTH. The contrast between the graduated windows of the upper portion and the base provides the main interest.



WOODHALL PARK, HERTS, A.D. 1776. PALLADIAN COMPOSITION ENRICHED BY TREATMENT OF GARDEN ENTOURAGE
(Thomas Leverton, *Architect.*)



CLONMELL HOUSE, 17 HARCOURT STREET
TYPICAL DUBLIN MANSION ENTRANCE

The framing of the doorway within a delicate projecting moulding is peculiar to Dublin.



NOS. 52 AND 53, ST. STEPHEN'S GREEN, DUBLIN, A.D. 1771. EIGHTEENTH-CENTURY
MANSIONS IN PAIRS

Field of brick surface contrasted with windows of diminishing sizes.

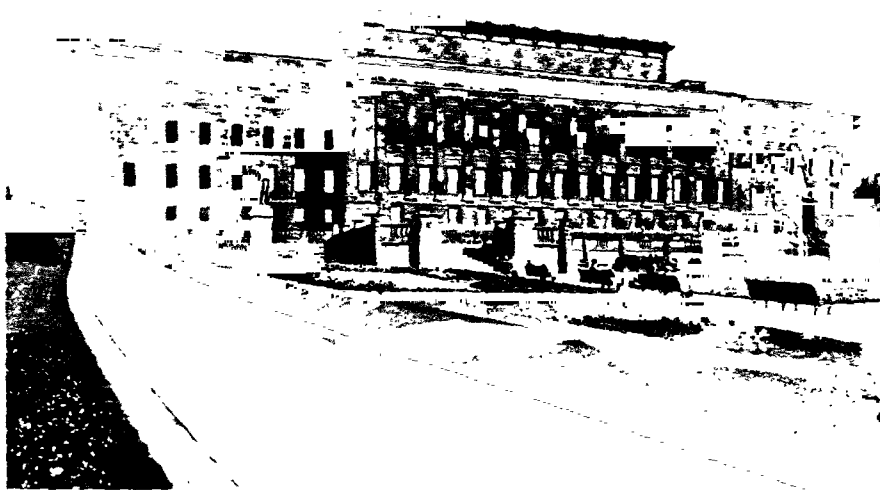


MERRION SQUARE, NORTH, DUBLIN, A.D. 1762 AND LATER. MAGNIFICENT
RANGE OF BRICK HOUSES WITH VARIED INCIDENTS TO INDIVIDUAL FAÇADES



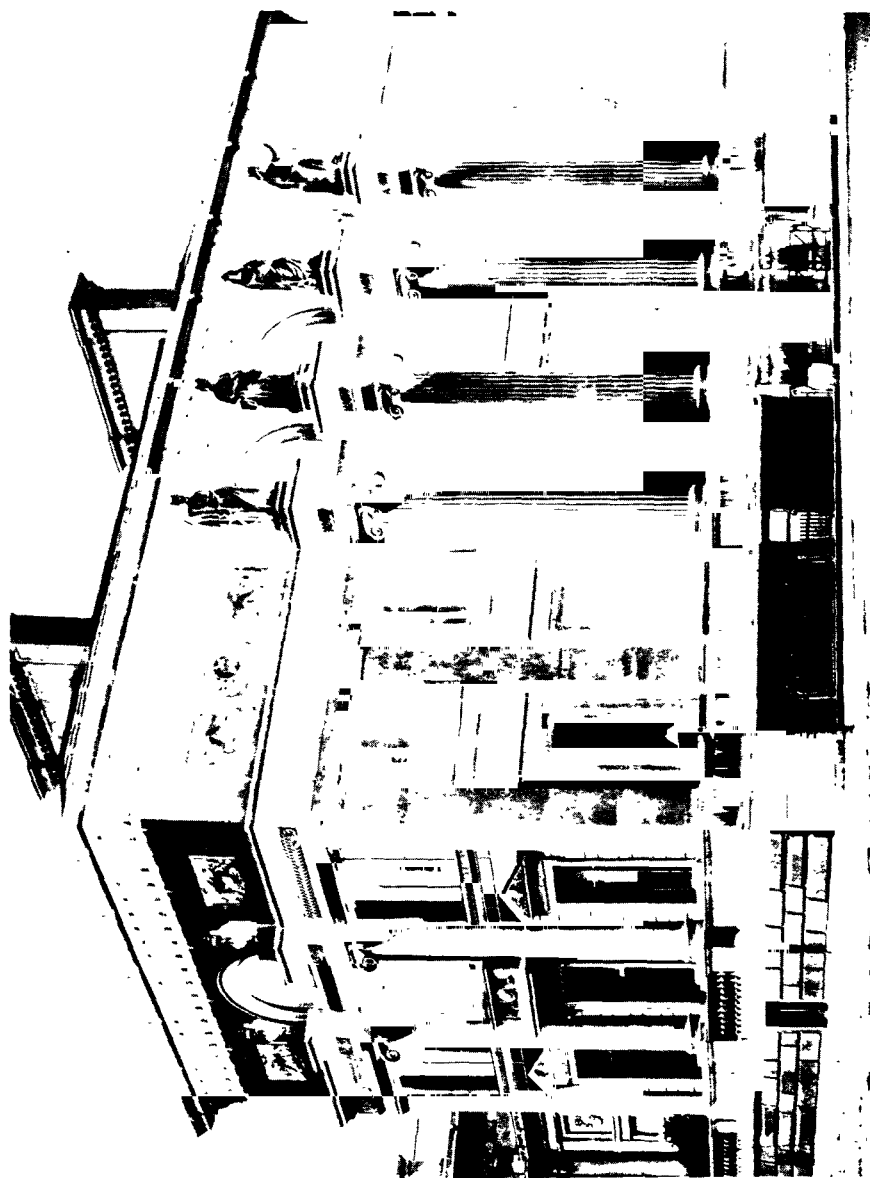
ST. GEORGE'S HALL, LIVERPOOL, A.D. 1839. LOGGIA FORMATION OF IMPRESSIVE REPETITION

(Harvey Lonsdale Elmes, *Architect*. Completed by Prof. C. R. Cockerell, R.A.)



ST. GEORGE'S HALL, LIVERPOOL, A.D. 1839. BACK ELEVATION

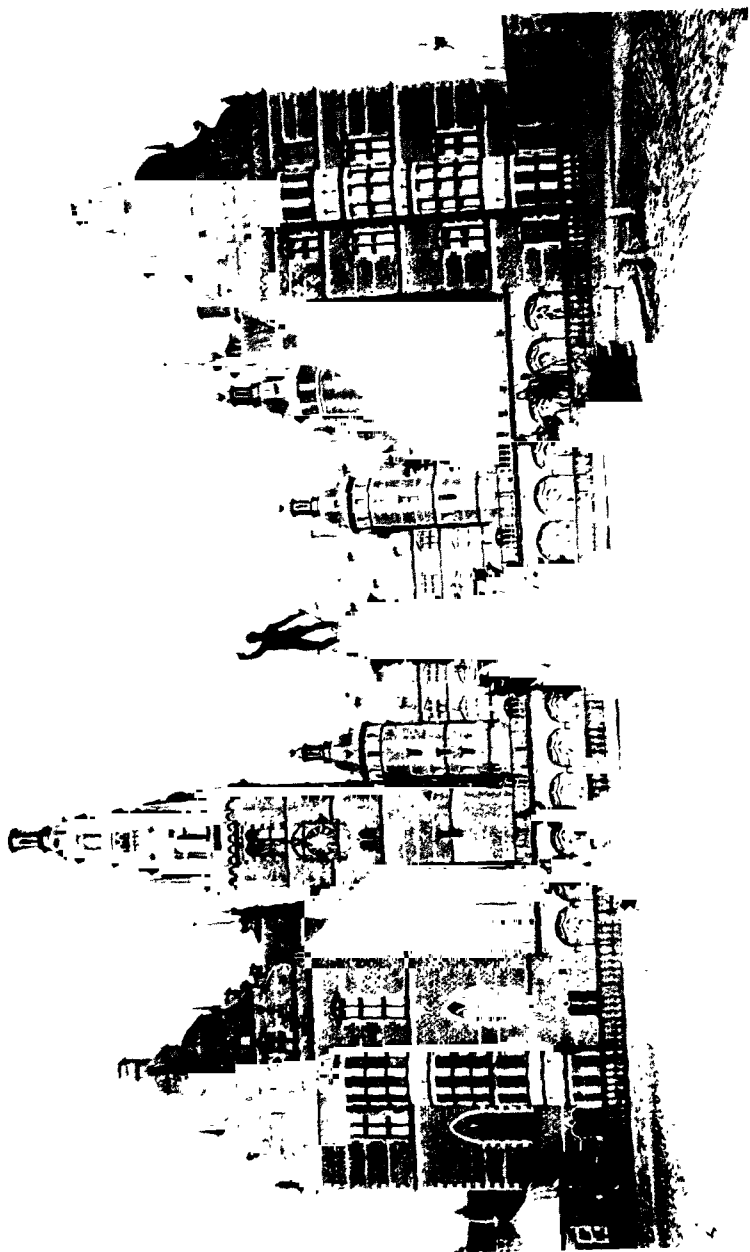
Giant order continued at back of building with corridor interpenetrating to complete circulation. Upper portion echoes loggia treatment of main front. (Harvey Lonsdale Elmes, *Architect*.) Completed by Prof. C. R. Cockerell, R.A.



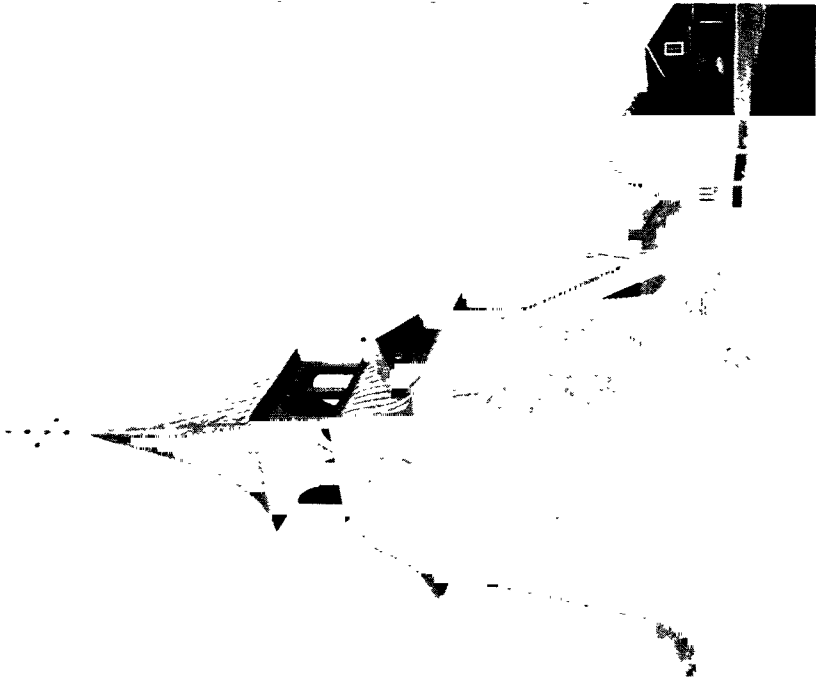
TAYLORIAN BUILDING, OXFORD, A.D. 1845. BAROQUE COMPOSITION WITH GREEK DETAIL.
(colour imparted to the façade by insulated columns. (Professor C. R. Cockerell, R. A., *Architect*.)

Chapter 5

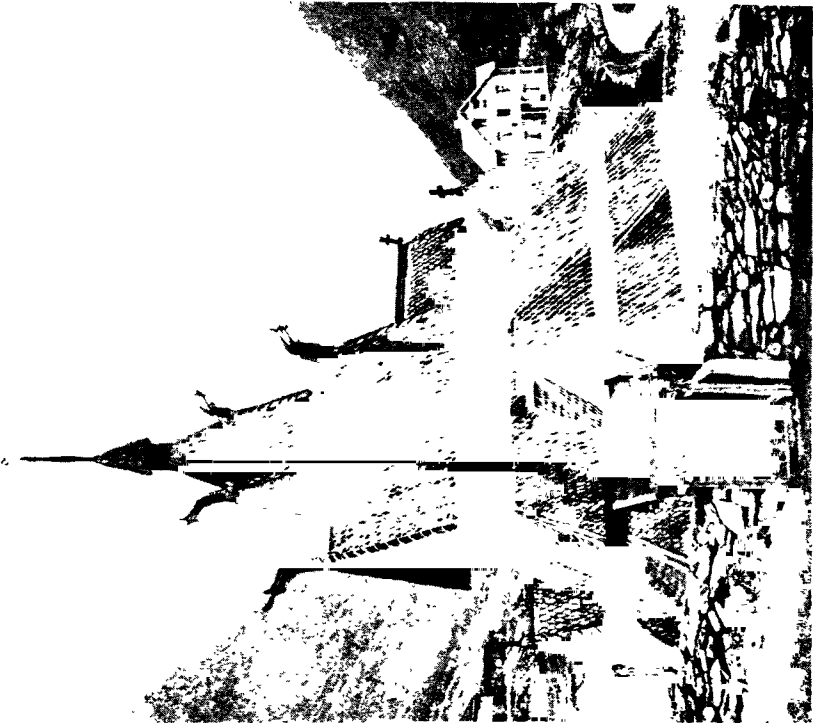
Architecture in Scandinavian Countries and Russia, Sixteenth to Nineteenth Century



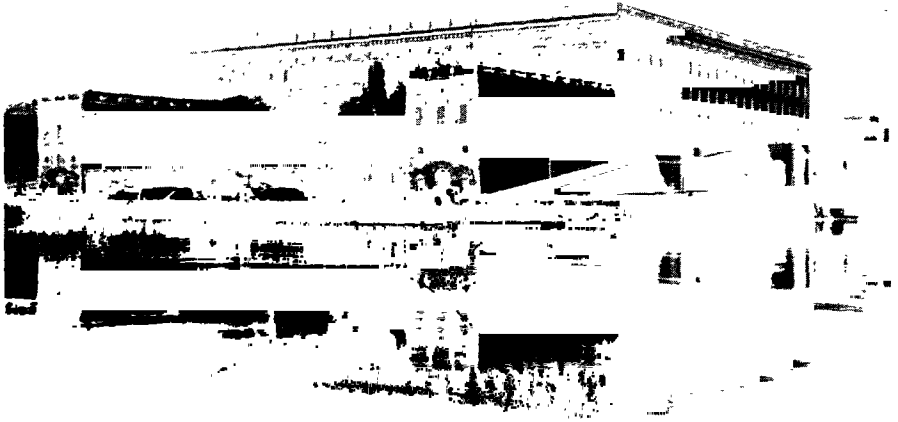
FREDRIKSBOURG CASTLE, DENMARK. COMPOSITION ARISING FROM U-TYPE OF PLAN WITH DOMINANT TOWER PLACED ASYMMETRICALLY



BELL TOWER, MÅRA, SWEDEN. TRUSSED CONSTRUCTION IMPRESSED EXTERNALLY

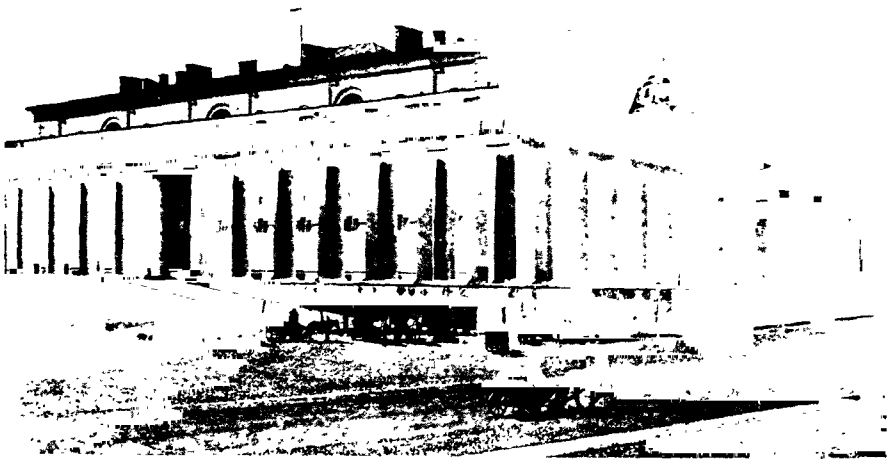


CHURCH OF BÆRGUND, NORWAY. ROOF GROUPING DETERMINED BY MODE OF TIMBER SPANS AND CLIMATIC NECESSITY



ROYAL PALACE, STOCKHOLM. LATE SEVENTEENTH CENTURY

Restrained treatment of main mass relieved by projecting wings. (Nicodemus Tessin, *Architect.*)



THE BOURSE, LENINGRAD. LATE EIGHTEENTH CENTURY

Central hall with peripteral colonnade. (Thomas de Thomon, *Architect.*)



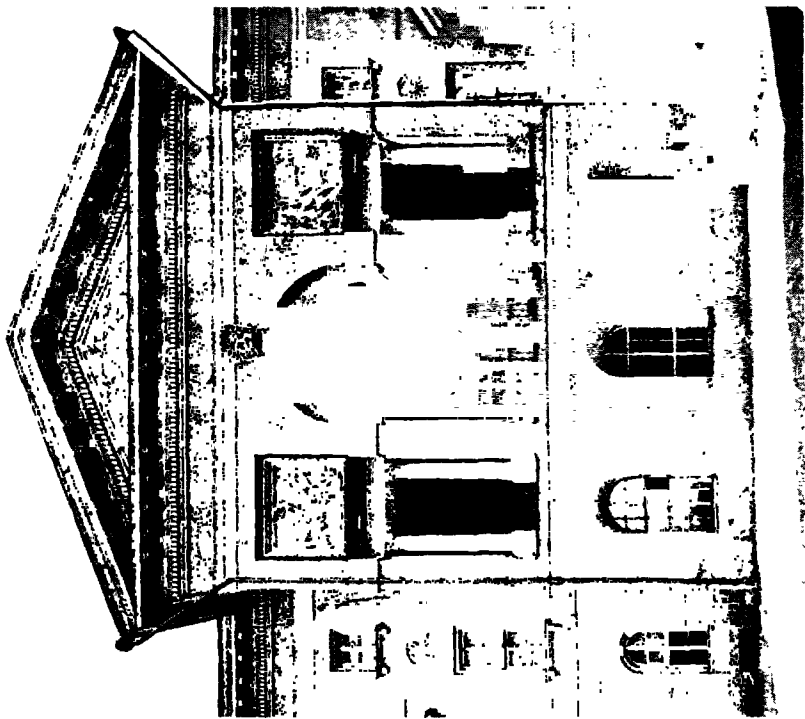
THE KREMLIN, MOSCOW. FORTRESS ARCHITECTURE ON THE GREAT SCALE



FORMER HOUSE OF PRINCE GAGARINE. DETAIL OF PEDIMENT



IMPERIAL ACADEMY OF ARTS, LENINGRAD. FRENCH
DESIGN TRANSPLANTED TO RUSSIA

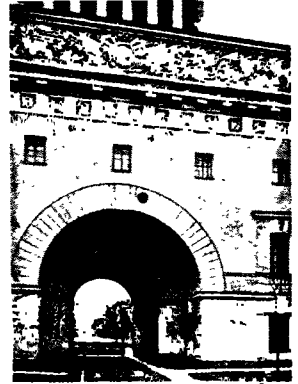
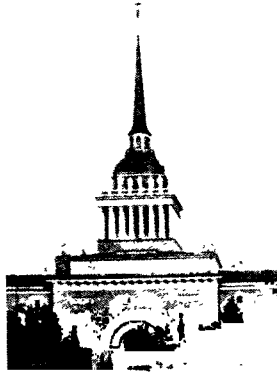


HOSPITAL OF Y. AOUSA

Two Russian buildings showing variations of Palladian themes.



FORMER OFFICE OF IMPERIAL DIRECTOR, LENINGRAD

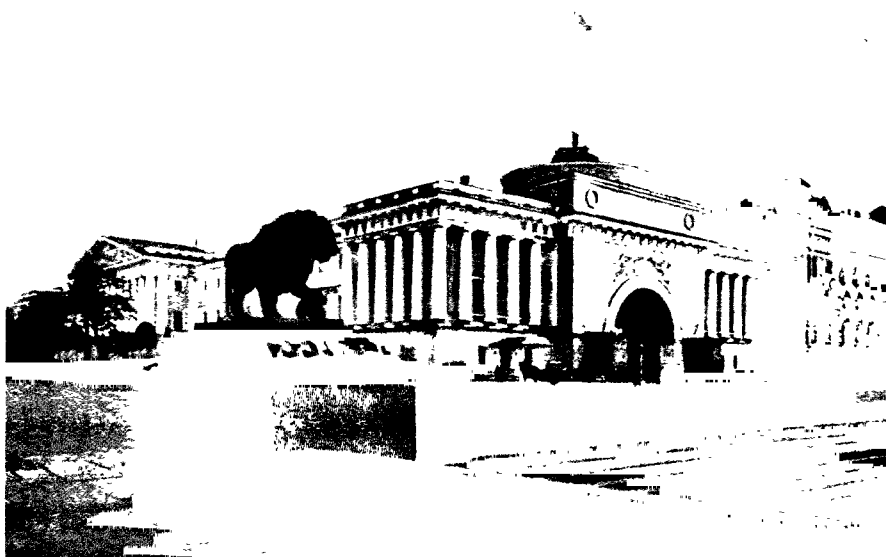


THE ADMIRALTY, LENINGRAD

Scale so lengthy that three-part compositions complete in themselves are admitted as complementary features. Centre marked by great entrance and tower. (Adrien Zakharoff, *Architect*.)



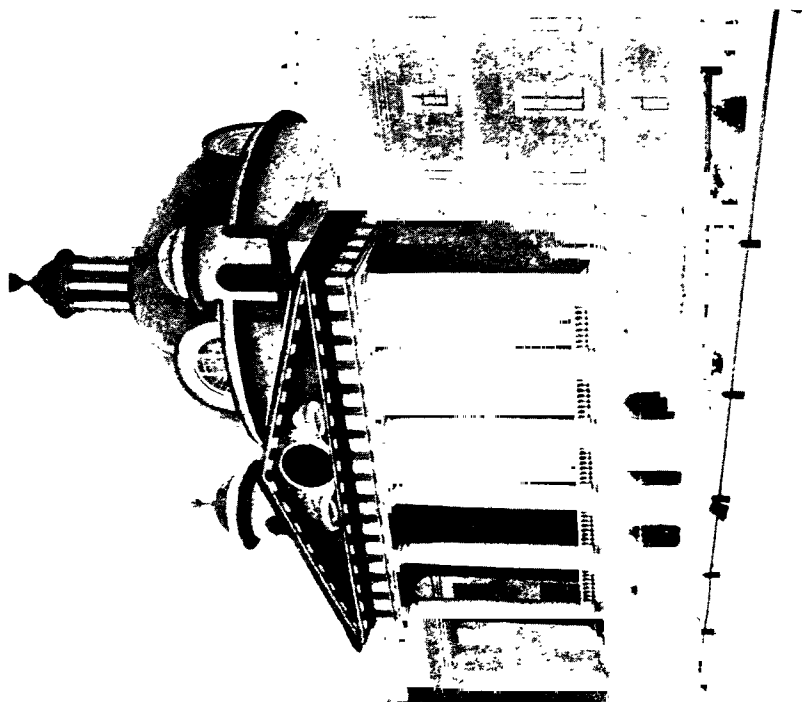
PALACE OF PETERHOF. (AUSTERE PALLADIAN GROUPING)
(Quarenghi, *Architect*.)



THE ADMIRALTY, LENINGRAD. DETAIL OF EACH PAVILION
(Adrien Zakharoff, *Architect.*)



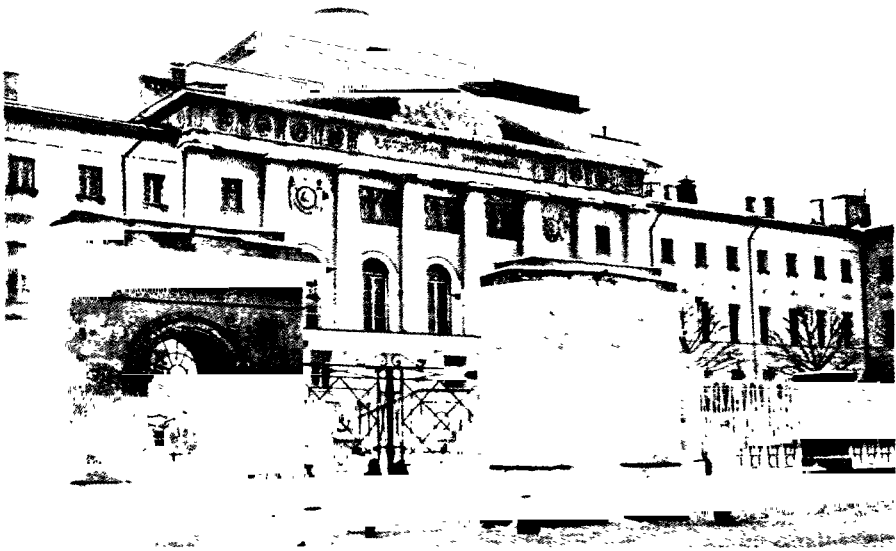
BEREZA KURSK. FAÇADE TOWARDS THE PARK
Russian timber-built Datchia.



FORMER HOSPITAL GALITZJINE. COMPOSITION DERIVED FROM SEVENTEENTH-CENTURY ITALIAN ARCHITECTURE (COMPRISING DOMI, PORTICO, AND TURRELS)



FORMER HOUSE OF PRINCE GAGARINE. FRONTISPIECE INSPIRED FROM FRENCH EMPIRE STYLE



MOSCOW UNIVERSITY. EXAMPLE OF EIGHTEENTH-CENTURY CLASSICAL MANNER



FORMER BANK OF THE EMPIRE. FAÇADE SHOWING INFLUENCES DERIVED FROM CONTEMPORARY ARCHITECTURE IN ENGLAND AND FRANCE

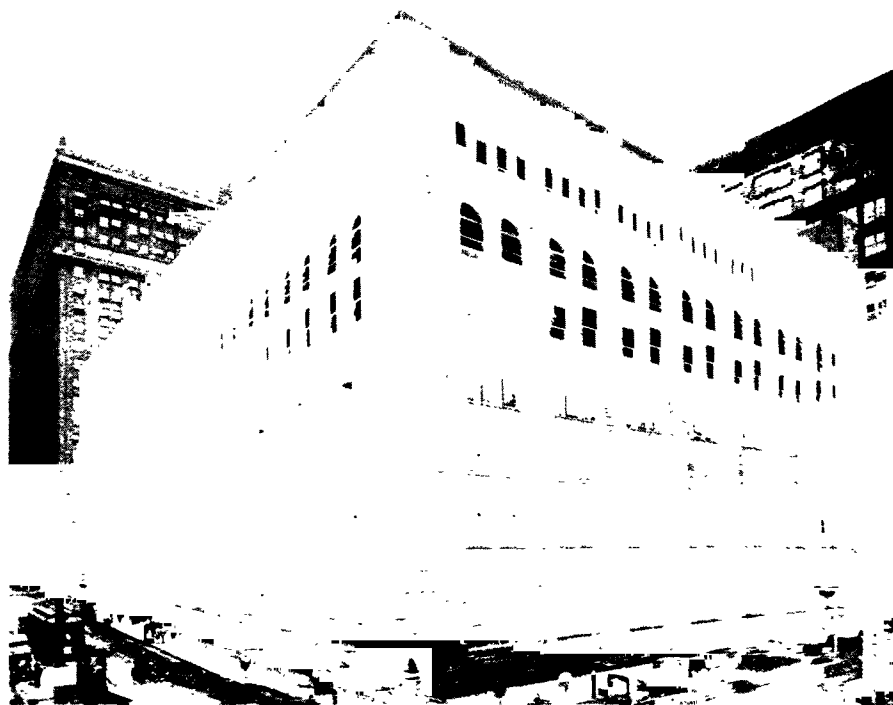
Chapter 6
American Architecture



ST. MICHAEL'S, CHARLESTON, S. CAROLINA. COLONIAL CHURCH INSPIRED FROM
ENGLISH PROTOTYPE (EIGHTEENTH CENTURY)



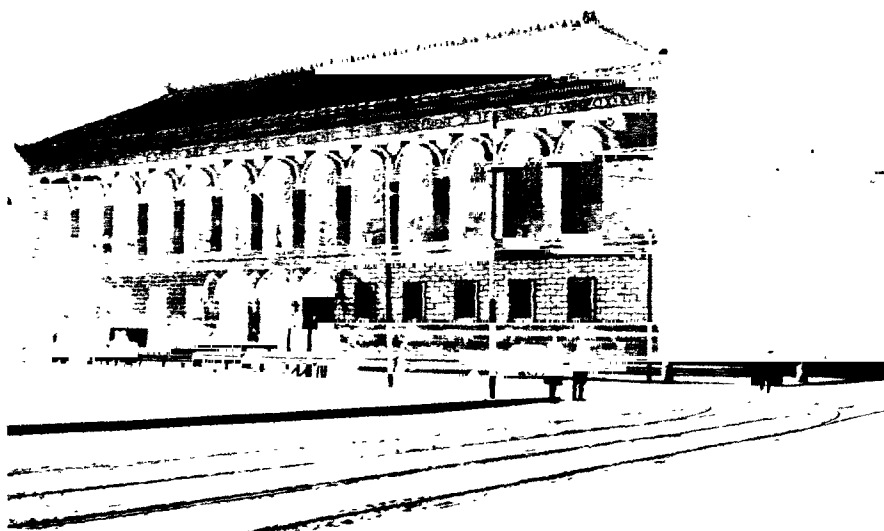
MOUNT VERNON, VIRGINIA, U.S.A. COLONIAL MANSION WITH REGIONAL CHARACTERISTICS DEVELOPED FROM THE USE OF TIMBER (EIGHTEENTH CENTURY)



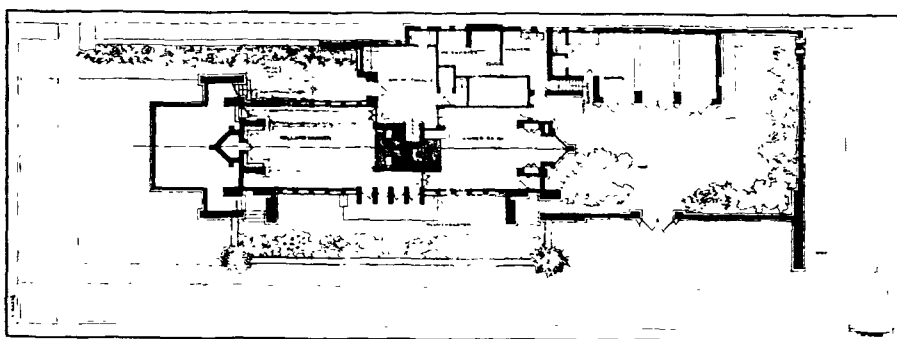
MARSHALL FIELD WHOLESALE STORE. ASTYLAR BUILDING WITH CONTRASTED FENESTRATION RHYTHMICALLY DISPOSED (SECOND HALF OF THE NINETEENTH CENTURY)
(H. H. Richardson, *Architect.*)



WESTPOINT MILITARY ACADEMY POWER-HOUSE AND RIDING HALL.
MODERN RENDERING OF ROMANTIC THEME
(Charles Goodhue, *Architect*.)

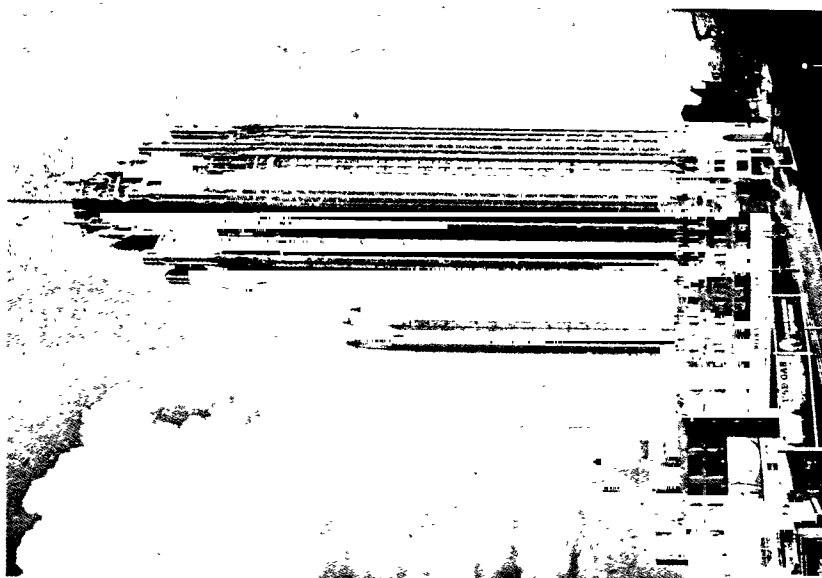


BOSTON PUBLIC LIBRARY. IMPORTANT FIRST-FLOOR WINDOWS EXPRESSING GREAT
READING-ROOM
(McKim Mead and White, *Architects*.)

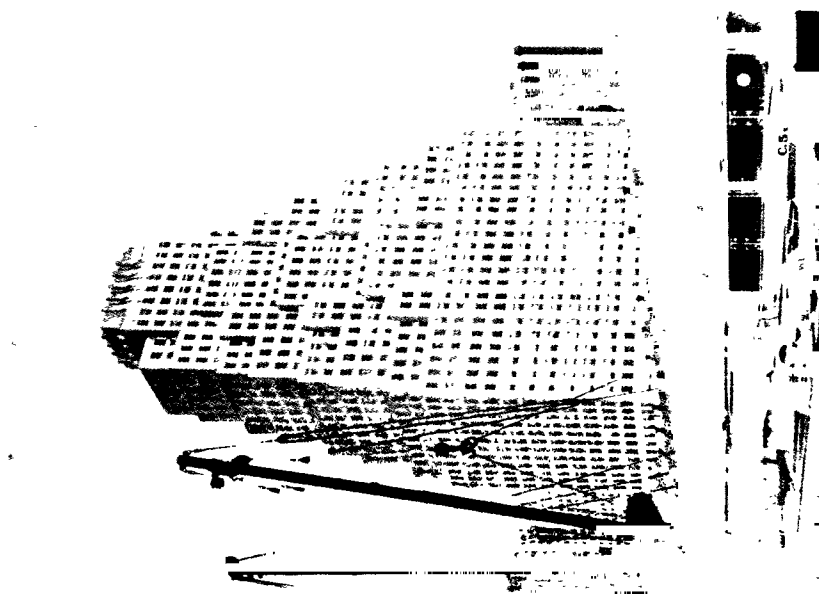


ROBIE HOUSE, CHICAGO. EXAMPLE OF REASONED DESIGN WITH HORIZONTAL THEME DOMINATING

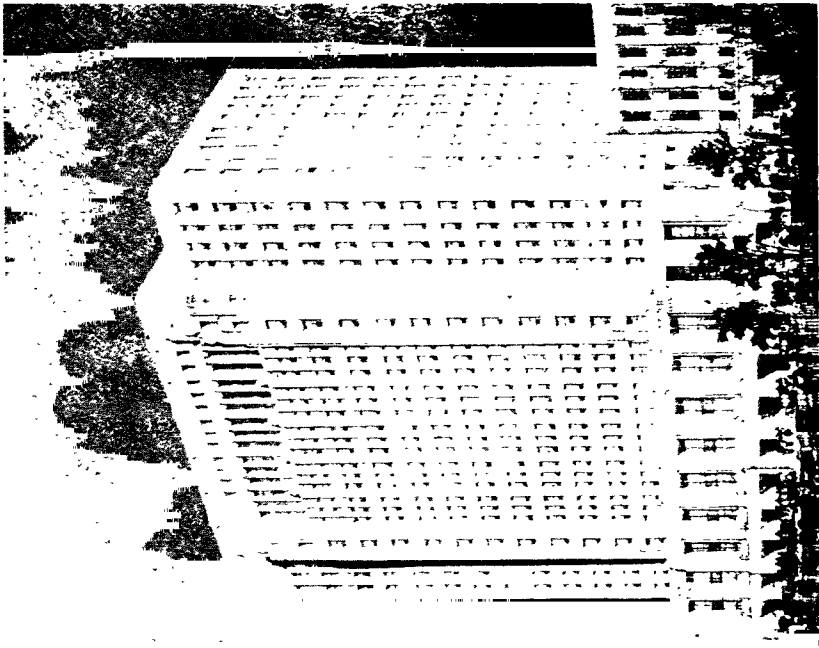
Effective contrast of light and shade. (Frank Lloyd Wright, *Architect*)



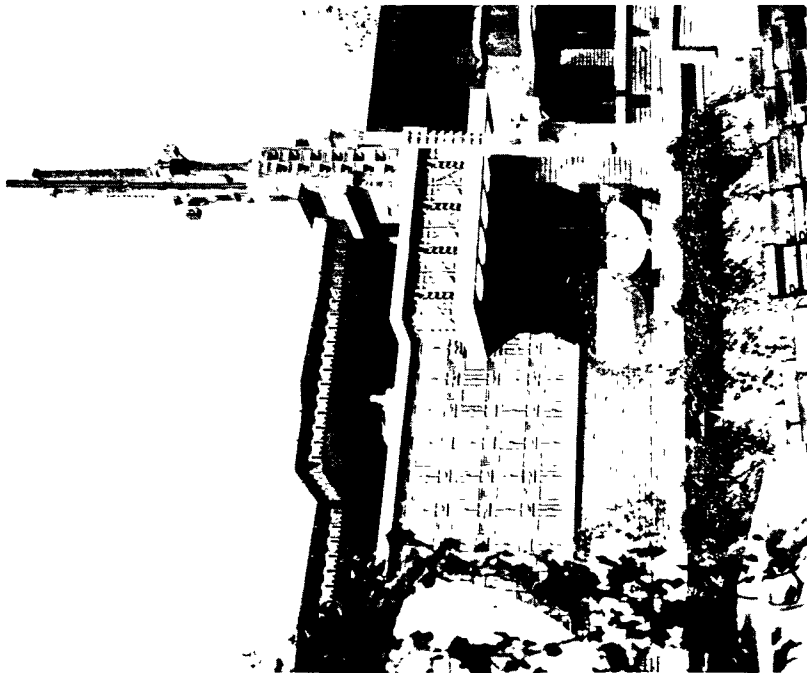
"CHICAGO TRIBUNE" BUILDING. TOWER DESIGN IN WHICH VERTICALITY IS ACCENTUATED BY REGULAR PLAINS



100 WALL STREET, NEW YORK. ZIGZAGGAL DESIGN SUBORDINATING INDIVIDUAL INTEREST OF FLUORINATION



SKYSCRAPER, SOUTH DALLAS, TEXAS. CUBE BUILDING WITH PATTERNED FINESTRATION



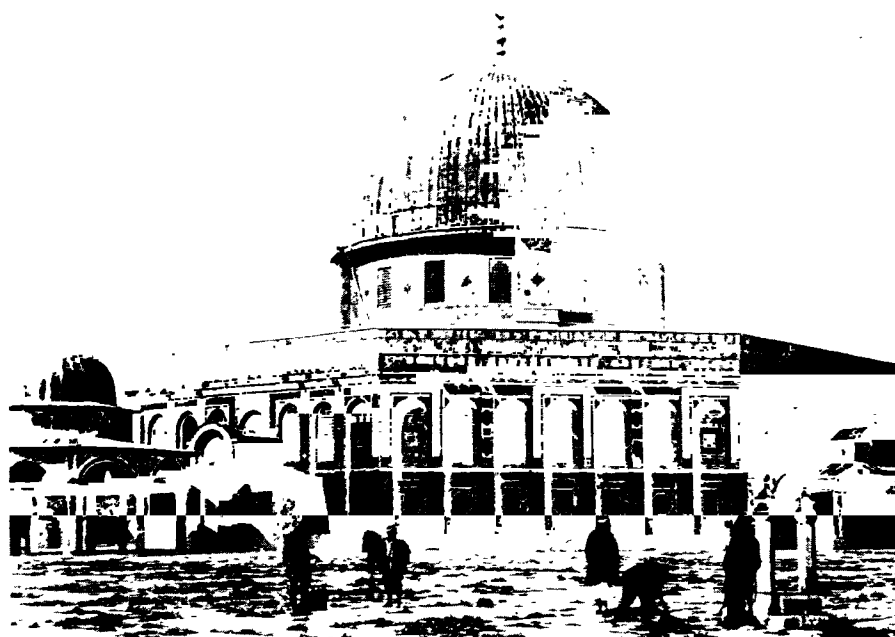
MIDWAY GARDENS, CHICAGO. ATTEMPT AT ORIGINALLY INSPIRED FROM INDIGENOUS AMERICAN BUILDINGS (Frank Lloyd Wright, Architect.)

Chapter 7

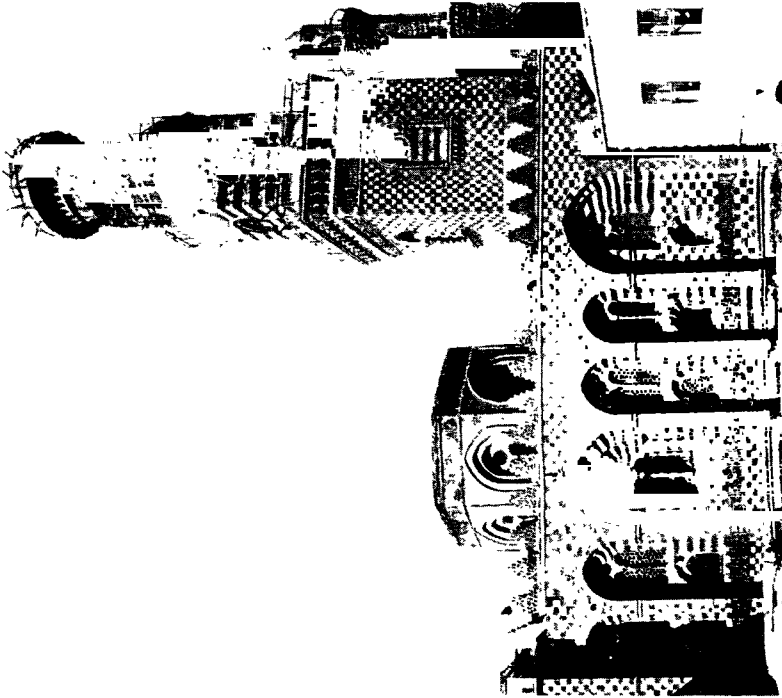
Non-European Architecture



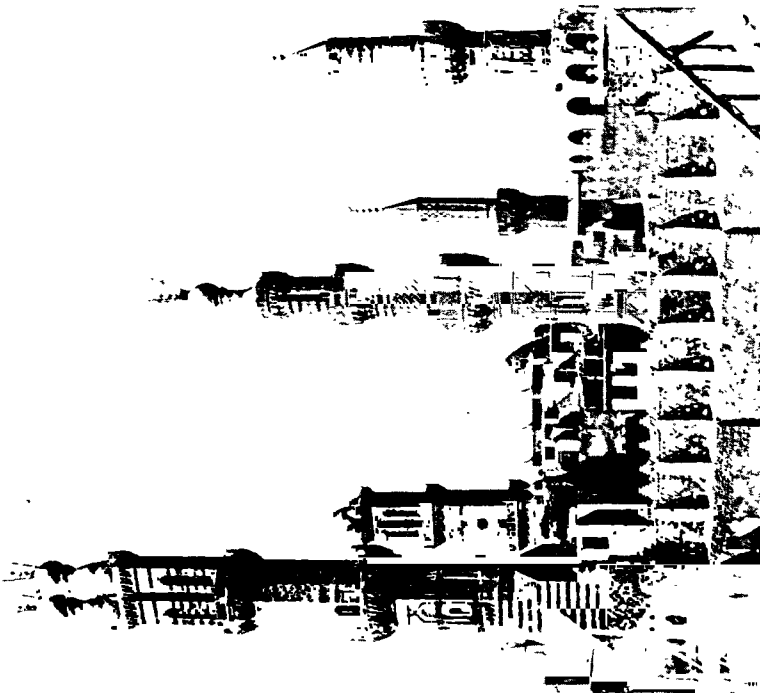
HOTEL, CAIRO. COMPOSITION SHOWING ALTERNATING AND EQUALLY SPACED SCREENED WINDOWS AND BALCONIES



MOSQUE OF OMAR, JERUSALEM, A.D. 688 APPLICATION OF GEOMETRICAL PRINCIPLES TO FORMATION OF DOME EMERGING FROM THE CENTRE OF A POLYGON



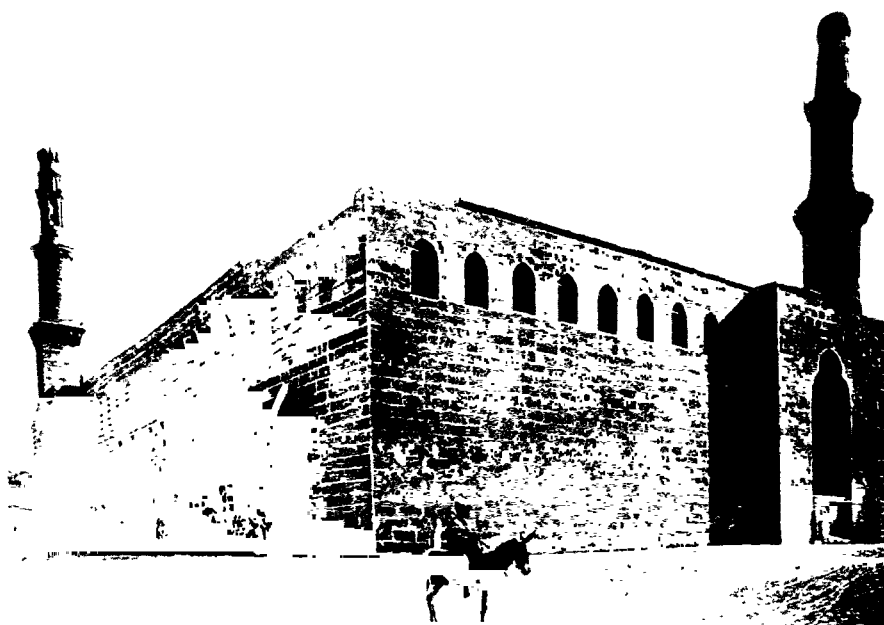
MOSQUE OF QUALAUN, CAIRO, A.D. 1287. EGYPTIAN SCHOOL. DESIGN ARISING FROM THE APPLICATION OF GEOMETRICAL PRINCIPLES TO THE FORMATION OF ARCHES, MINARETS, DOME AND SURFACES. TREATMENT



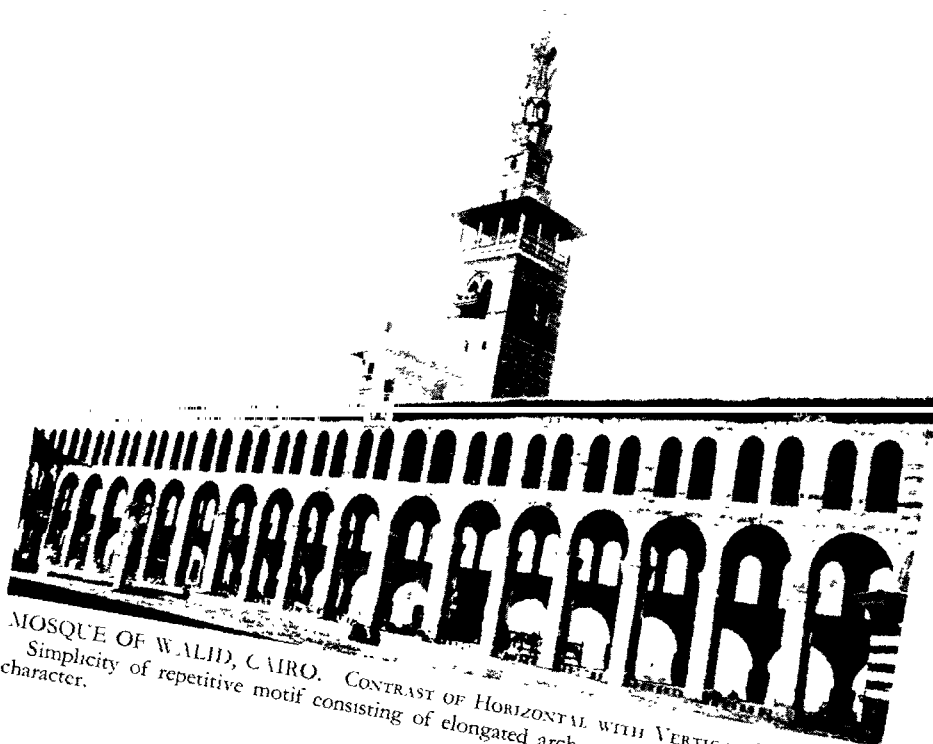
MOSQUE OF AL-VIHAR, EGYPTIAN SCHOOL. EFFECT PRODUCED BY SUBORDINATION OF DOME CONTRASTED WITH ACCOMPANYING MINARETS



MOSQUE OF QUALAUN, CAIRO. EGYPTIAN SCHOOL. DETAIL, SHOWING COMPOSITION OF SMALLER ARCHES WITH FRAME OF LARGER ONES



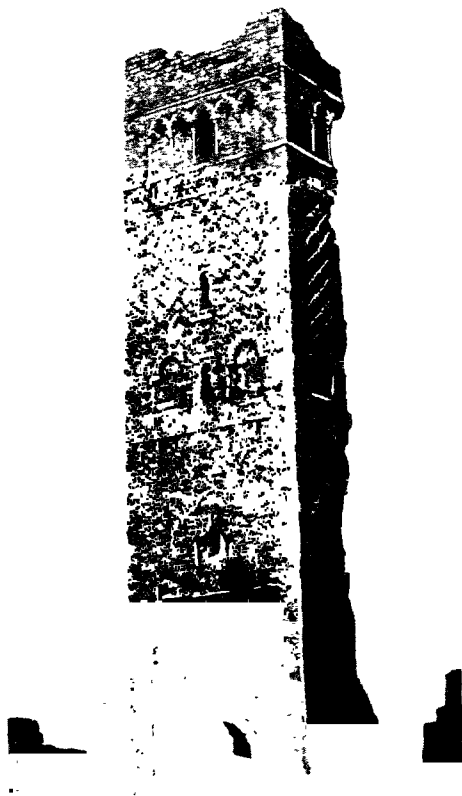
MOSQUE OF EN-NASIR, CAIRO. FOURTEENTH-CENTURY FIFTH OF MASONRY CROWNED BY FRIEZE OF SMALL WINDOWS



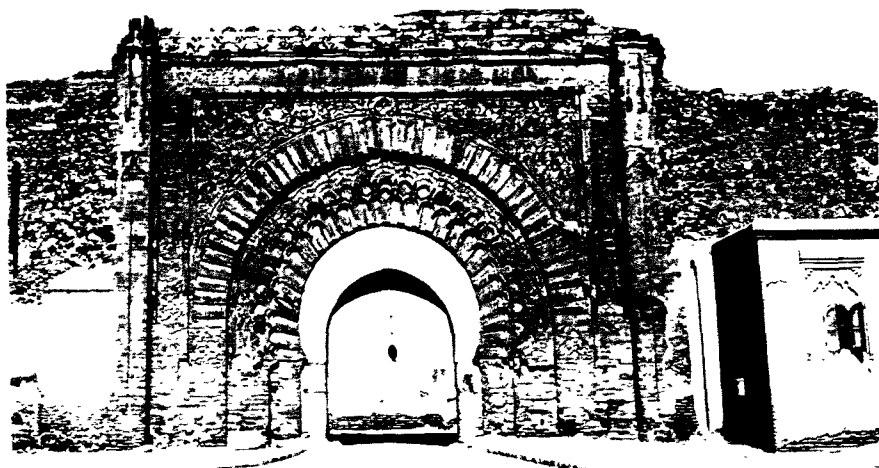
MOSQUE OF WALID, CAIRO. CONTRAST OF HORIZONTAL WITH VERTICAL SILHOUETTES
Simplicity of repetitive motif consisting of elongated arch and twin openings of similar character.



MOSQUE OF SULTAN AHMED, CONSTANTINOPLE, A.D. 1608. ANATOLIAN SCHOOL.
DESIGN BASED ON THE PROTOTYPE OF SANTA SOPHIA
Dome contrasting with needle-pointed minarets.



FORT OF MANSANDAH, TLEMCEIN. MINARET OF THE SQUARE TYPE, WITH WELL-BALANCED SLIGHT HORIZONTAL SUBDIVISIONS, GEOMETRICAL PATTERNING GIVING TEXTURE TO THE SURFACE



MARRAKESH, BAB AGNEBAAN. ARCHWAY OF THE HORSE-SHOE TYPE, FRAMED IN A SQUARE. Surface worked in geometrical patterns forming complete composition.



DOME OF MADRASAH, ISFAHAN, SEVENTEENTH CENTURY
BULBOUS DOME, RISING FROM OCTAGON, CONTRASTED WITH
DELICATE MINARET

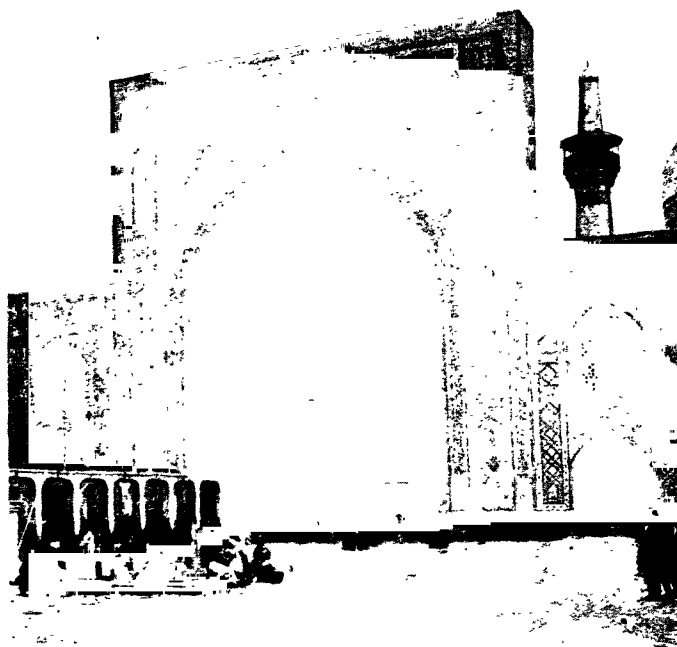


THE MAUSOLEUM OF ULUGH BEG, SAMARKAND, C. 1407
DOME AT STREET LEVEL, RISING FROM WITHIN AN OCTAGON



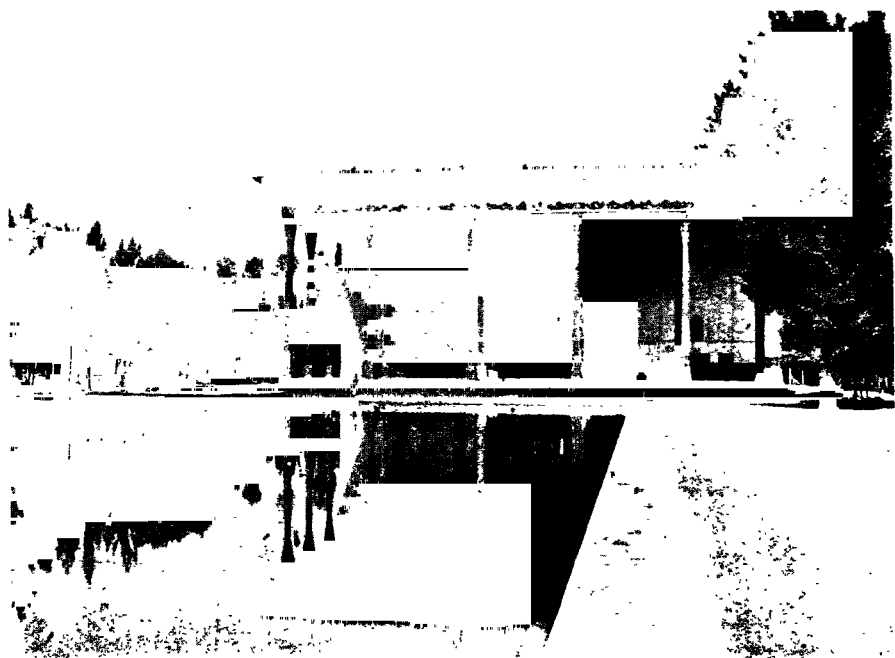
PORTAL OF ROYAL BASJAAL, ISPAHAN. EARLY SEVENTEENTH CENTURY

Great scale imparted by dominant central arch, contrasted with smaller openings.



MOSQUE OF GAHAR SHAD, PERSIA. INTERIOR. SEVENTEENTH CENTURY

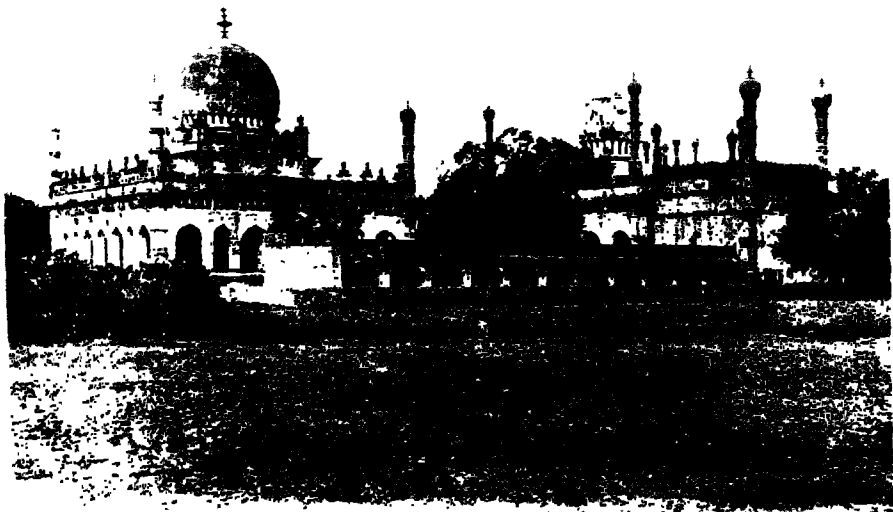
Great central arch, framed within a rectangle, accompanied by repetition of arches of similar shape to a smaller scale.



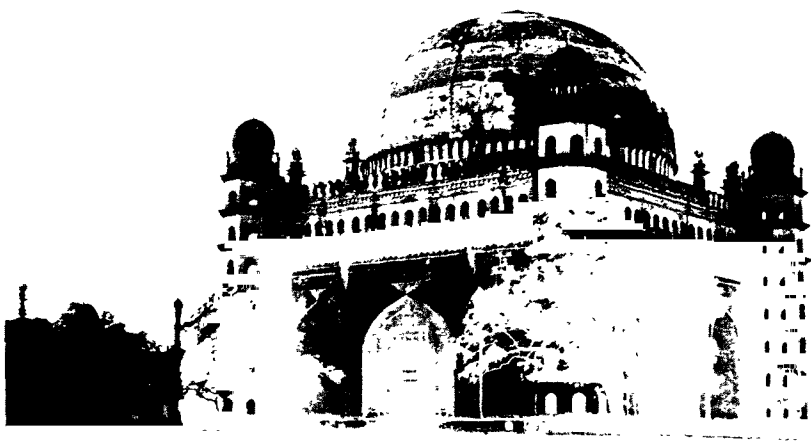
PALACE OF CHAHIL SUNTUN, ISPAHAN. SEVENTEENTH CENTURY. LOGGIA DESIGN DERIVED FROM GREAT ANTIQUITY



BRIDGE AT KAFLAN KUT, AZERBAIJAN. SEVENTEENTH CENTURY. STRUCTURAL EXPRESSION OF GREAT ARCHES
Buttresses pierced to allow passage of flood-water.



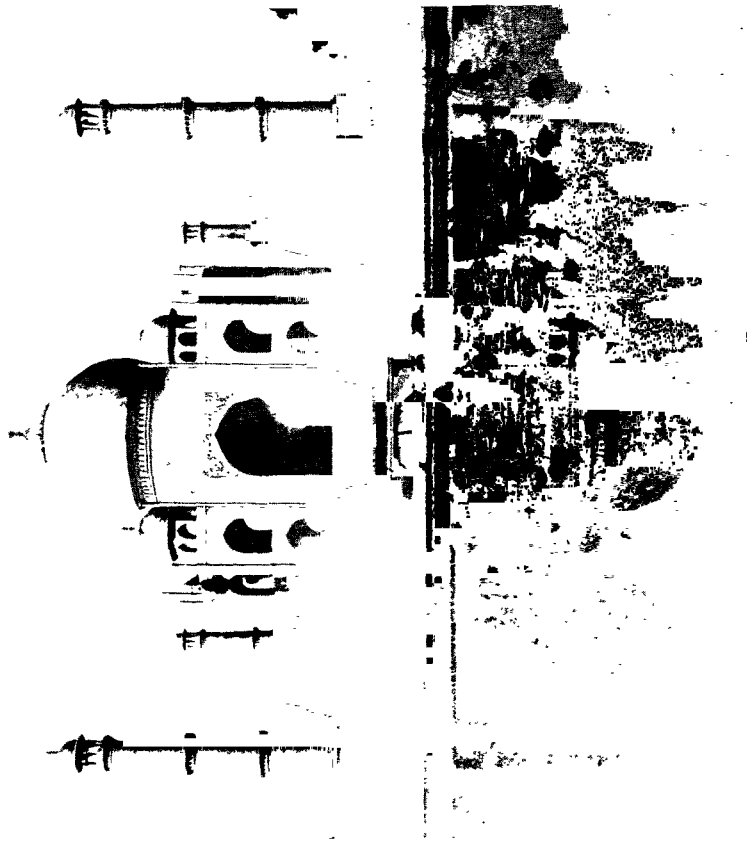
IBRAHIM RIJA, BIJAPUR, A.D. 1557. ENSEMBLE OF MOSQUE AND TOMB. CHARACTER IMPARTED THROUGH THE USE OF DOME AND MINARET



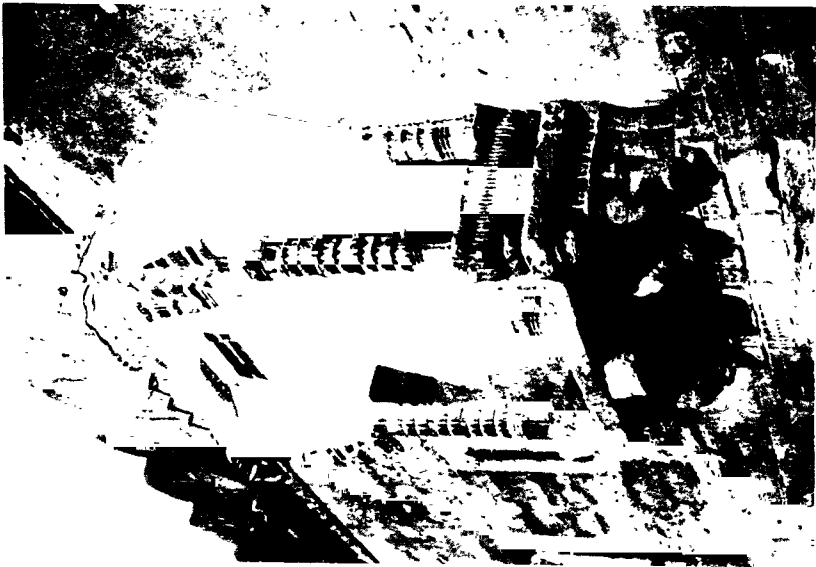
GOOL GUMBALJ, BIJAPUR. DOME EMERGING FROM SQUARE WITH FOUR ANGLE TOWERS LINKED BY UPPER FRIEZE OF WINDOWS



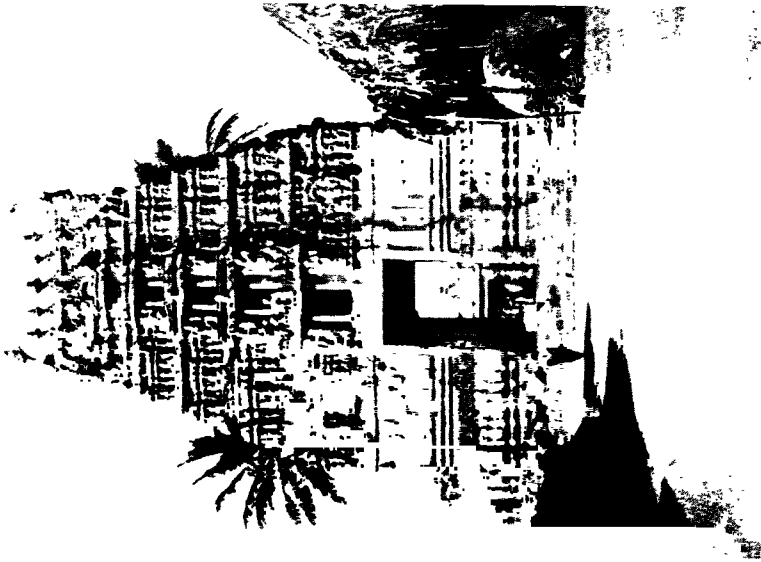
HOUSE OF LASHKAR, GWALIOR. MOGUL STYLE IN INDIA
Symmetrical composition of loggia, balcony and projecting cornices known as *chajja*.



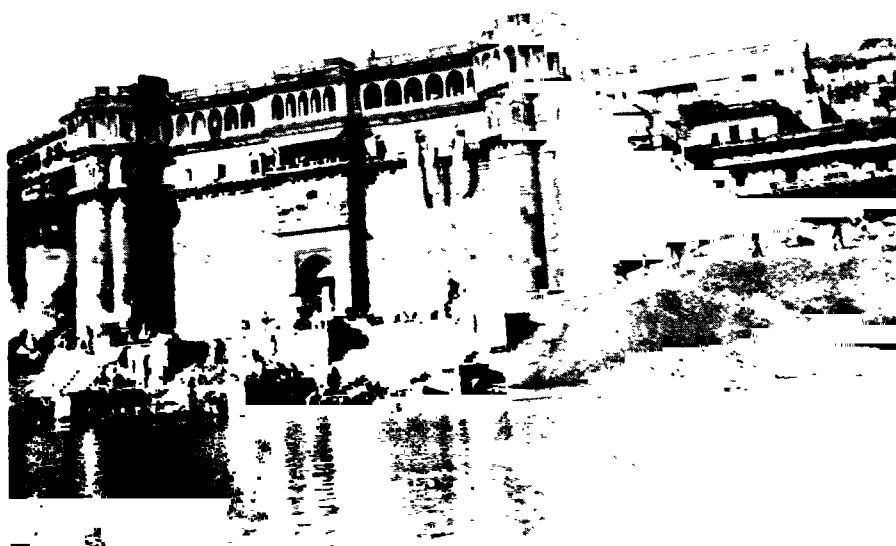
THE TAJ MAHAL. MOST PERFECT EXAMPLE OF MOGUL ARCHITECTURE
Elevation expressing forced symmetry in plan. All features reproduced on four elevations. Mass enhanced by four minarets at angles. Built by Shah Jahan A.D. 1630, as a mausoleum to his wife.



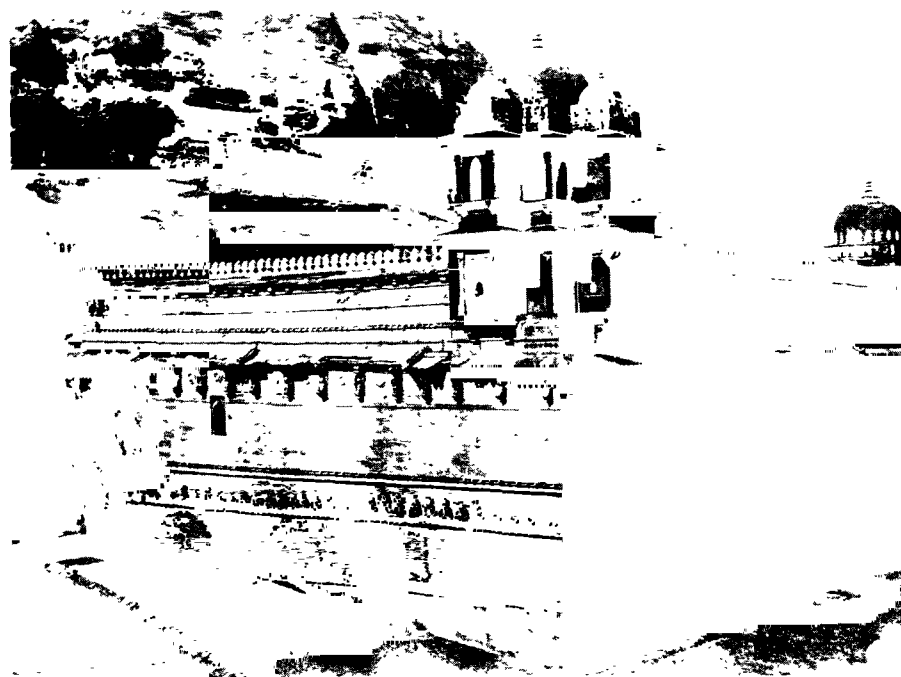
BALCONY OF MOSQUE, JUNAGADH, SIXTEENTH CENTURY. CASOPID BALCONY OF RICH DESIGN CONTRASTED WITH PLAIN WALL SURFACE



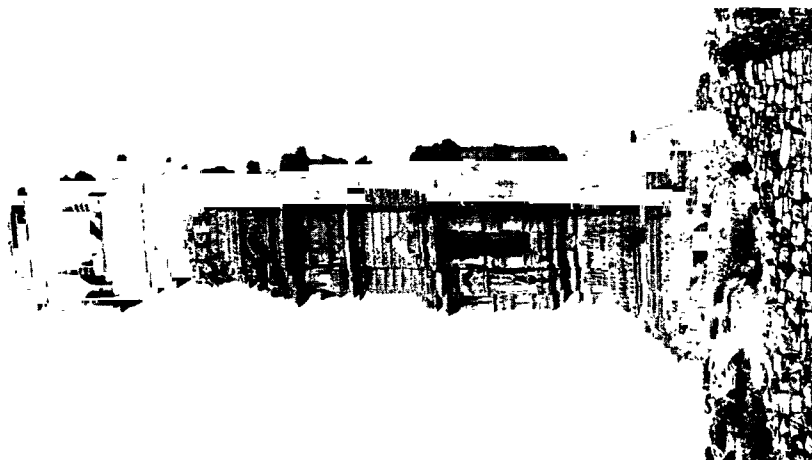
GUPURAM, BELUR, STEPPED PYRAMIDAL MASS WITH CENTRAL VERTICAL SUBMOTIF FORMING SECONDARY INTEREST



GHOOSLA GHAT, BENARES, A.D. 1860. MASS FORMED BY ANGLE BASTIONS WITH VERTICAL CENTRAL MOTIF AS SUB-ENTRÉE



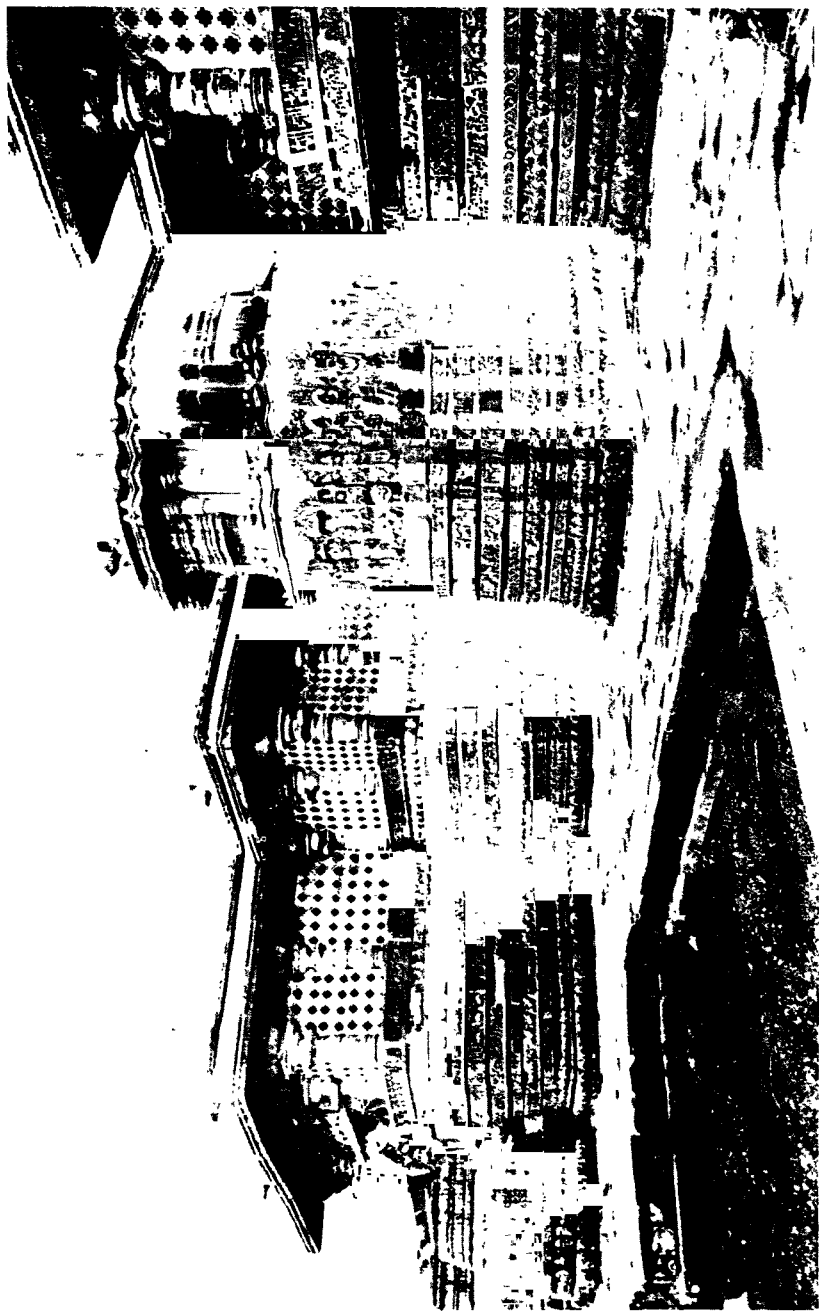
GUJAN MEHAL, GWALIOR FORT. WALL TREATMENT WITH ANGLE PAVILION OF COMPLEX FORM



TOWER OF FAME, CHITOR
STORYLID COMPOSITIONS WITH CONTRASTING ENRICHED STAGES CROWNED BY LANTERN FLAUTES



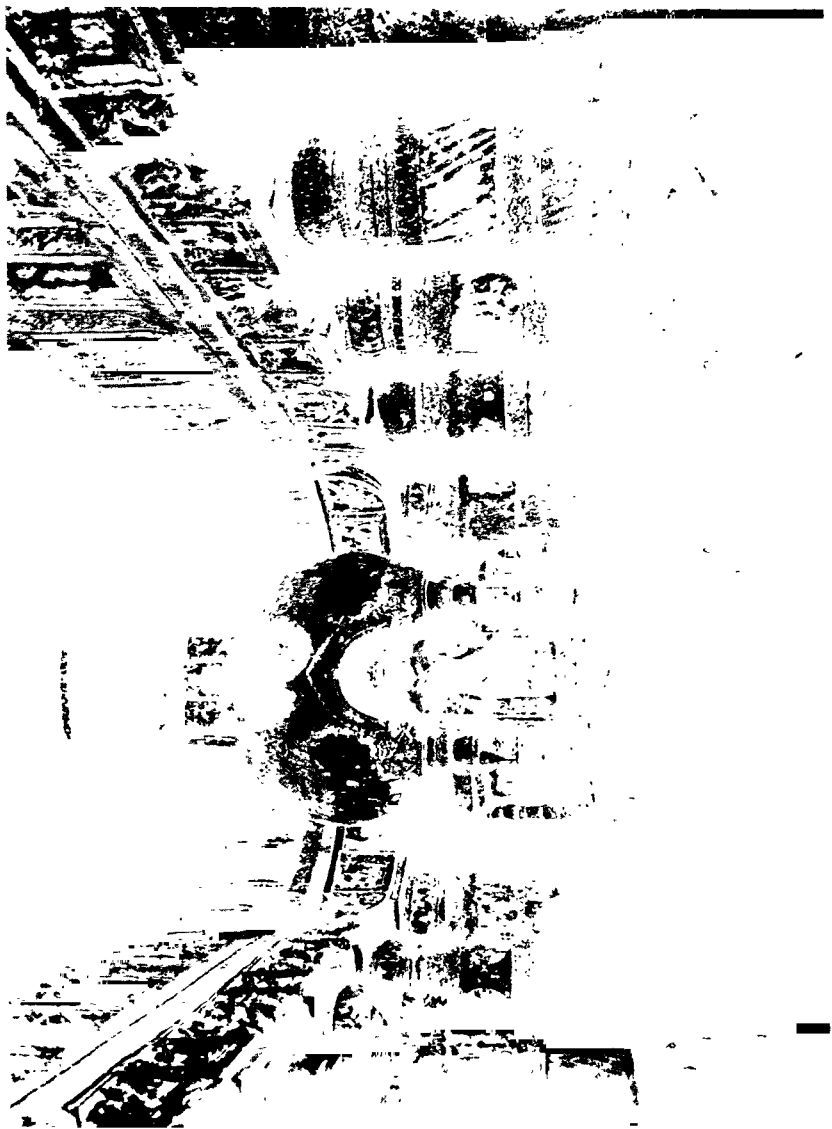
TOWER OF VICTORY, CHITOR
STORYLID COMPOSITIONS WITH CONTRASTING ENRICHED STAGES CROWNED BY LANTERN FLAUTES



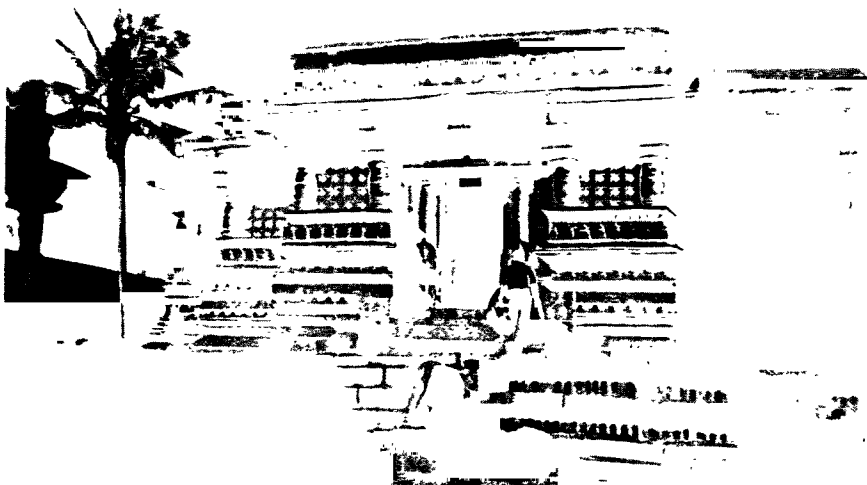
HALLABID TEMPLE, MYSORE STATE. COMPOSITION OF PAVILIONS CONSISTING OF RUSTIC VIED BASE, ORDER AND CROWNING CORNIC



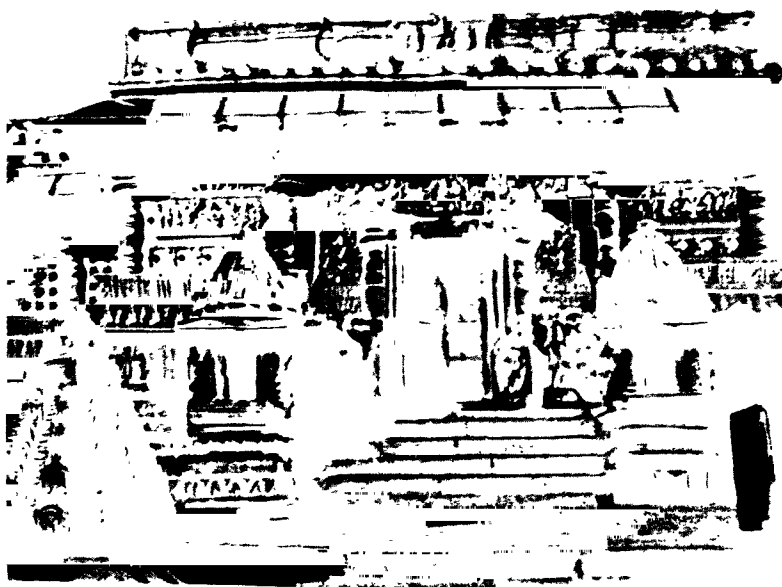
HALLABID TEMPLE, MYSORE STATE. MONUMENTAL PORTAL WITH SUPPORTING FEATURES,
APPROACH STAIRWAY AND CROWNING CORNICE



ROCK-CUT TEMPLE, AJUNTA. INTERNAL COLONNADE FRAMING SHRINE.



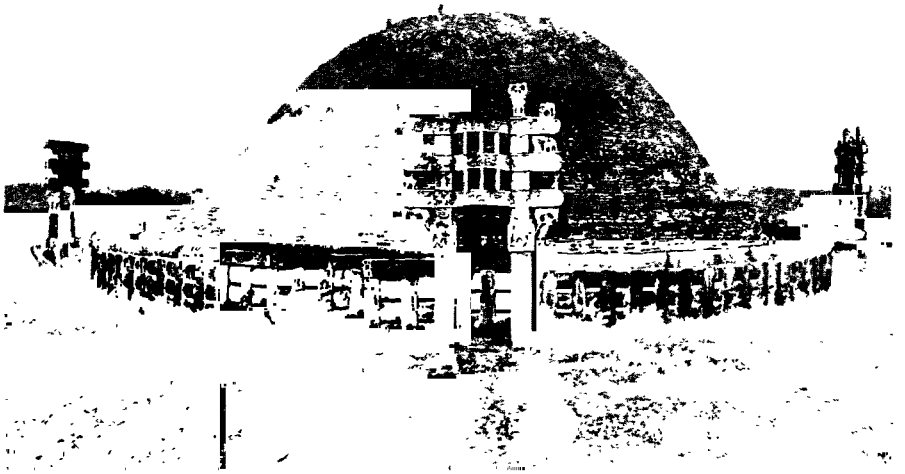
KAPPE CHENIGRAYA TEMPLE, BELUR. MONUMENTAL ENTRANCE WITH HORIZONTAL LINES DOMINATING



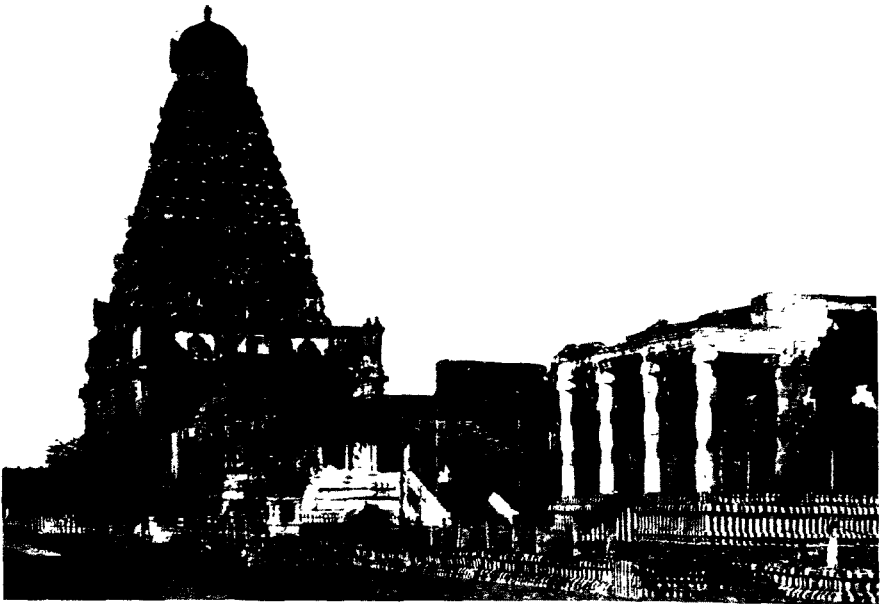
CHENNA KESHAVA TEMPLE, BELUR. MONUMENTAL DOORWAY WITH SUPPORTING FEATURES IN ADVANCE



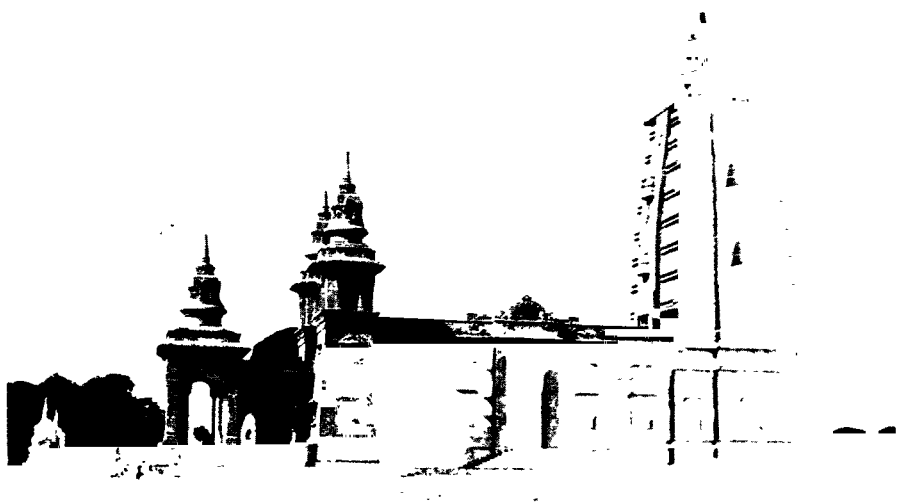
GREAT TEMPLE, TANJORE. TWIN TEMPLES OF SIMILAR SILHOUETTE



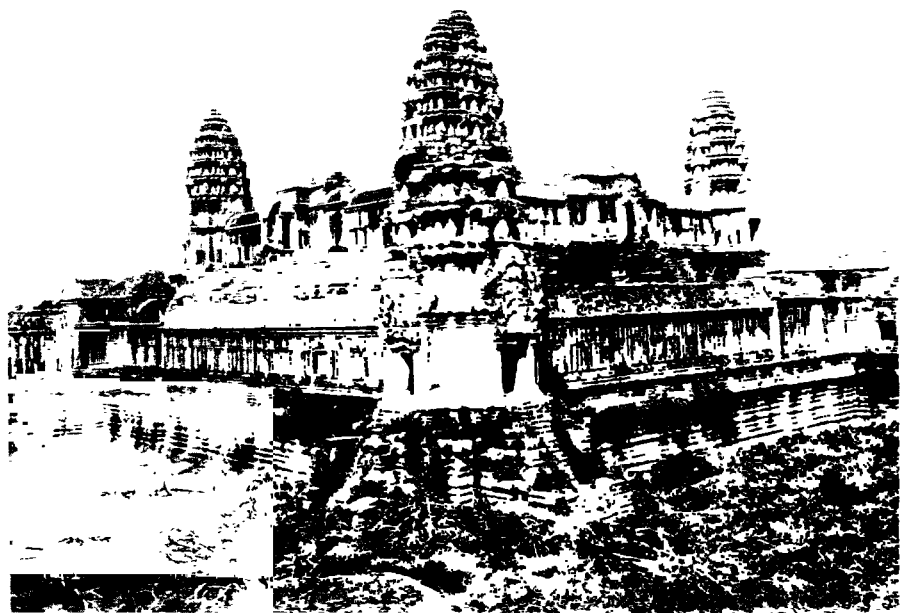
SANCHI TOPE. SACRED MOUND OF THE ASOKA PERIOD (150 B.C.). EXAMPLE OF SYMBOLICAL ARCHITECTURE, THE THREE HORIZONTAL BEAMS OF THE GATEWAY REPRESENTING THE BUDDHIST TRINITY



GREAT DRAVIDIAN TEMPLE, TANJORE. FOURTEENTH CENTURY. SYMBOLICAL SIKRU OR STEPPED CURVILINEAR-SIDED OBELISK



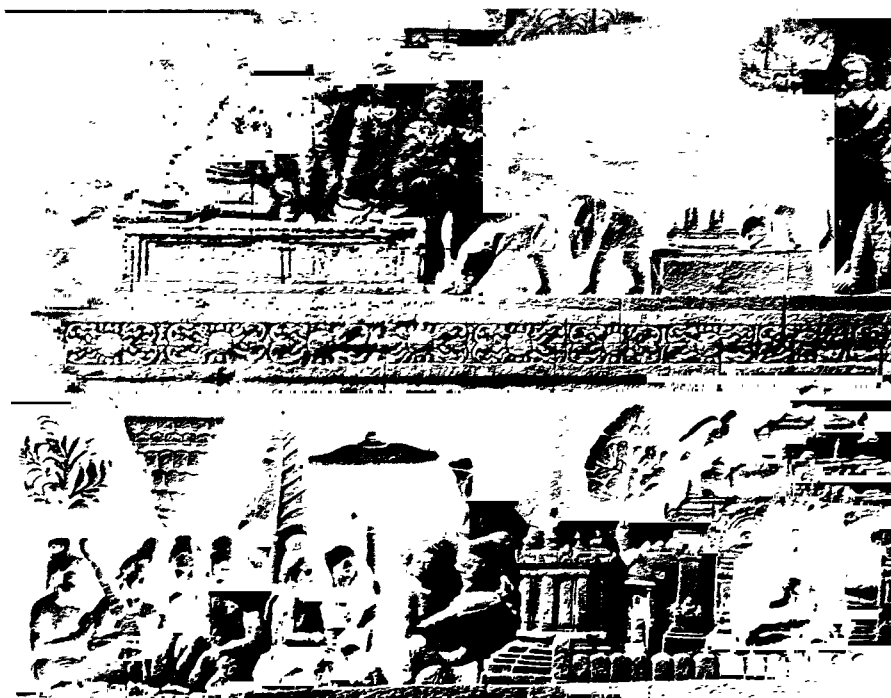
NEW BUDDHIST TEMPLE, SARNATH. COMPOSITION OF VERTICAL AND HORIZONTAL
MASSES DERIVED FROM HISTORICAL MOTIFS



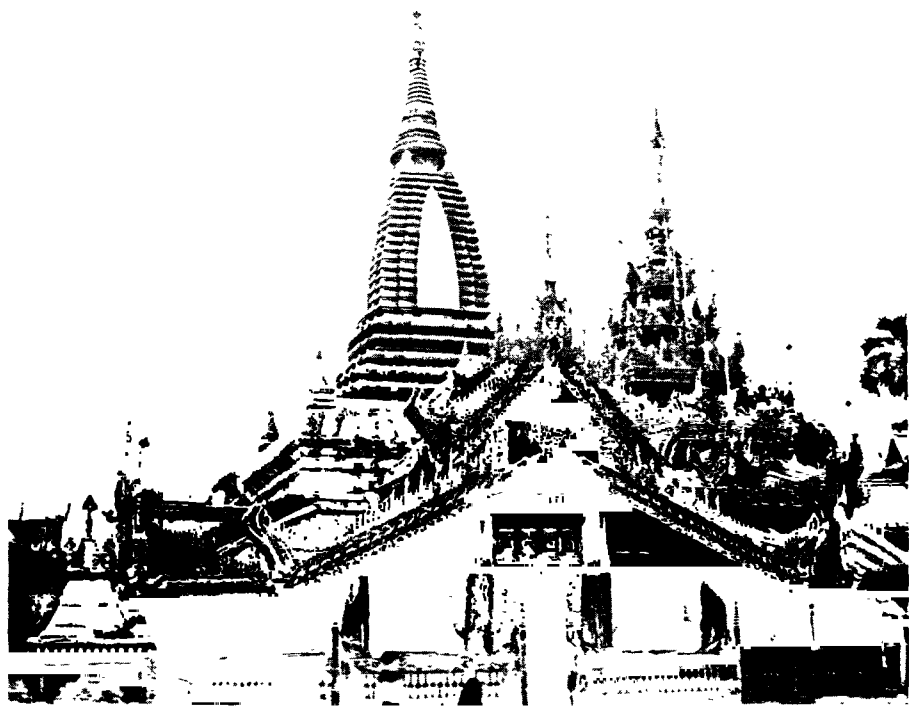
ANGKOR VAT. IMPRESSIVE MASSING. DOMICAL FORMS CONTRASTED WITH HORIZONTAL
STRATIATIONS



BORO BUDUR, JAVA. TERRACE FORMATIONS WITH INNUMERABLE SCULPTURAL INCIDENTS



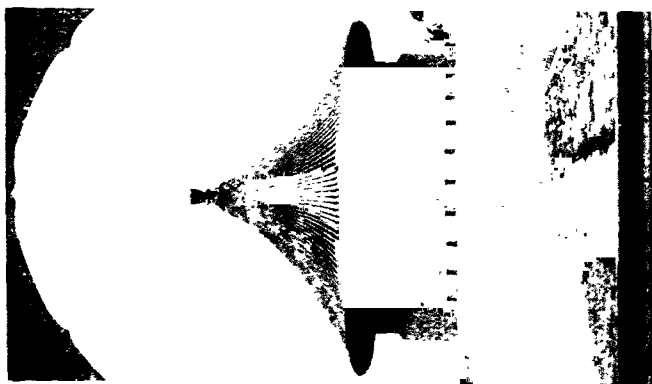
BORO BUDUR, JAVA. DETAIL OF SCULPTURAL PANELS



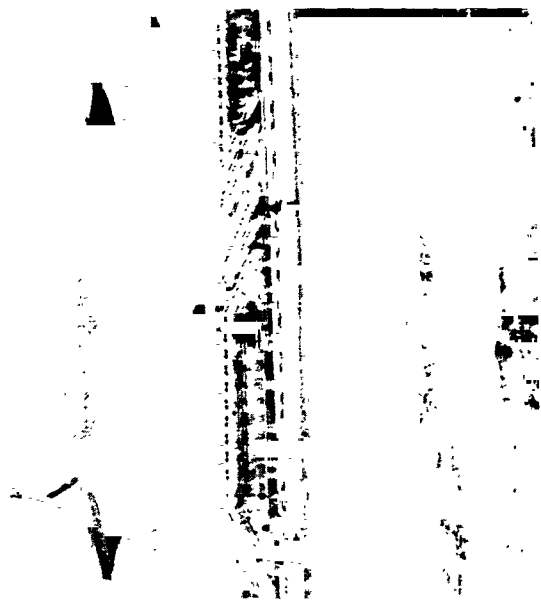
PAGAN PAGODA, BURMA. STEPPED VERTICAL SILHOUETTES OF ORIGINAL AND VARIED FORM



PAGAN PAGODA, ANANDA. MILDLY OF ARTISTIC FORMS



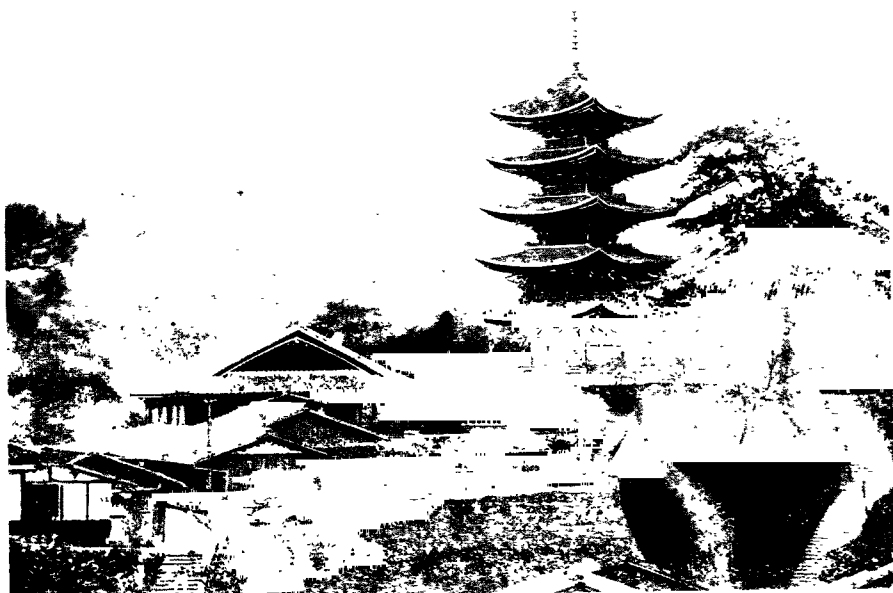
ANCESTRAL HALL, TEMPLE OF THE WEN, PEKIN. GROWING-OUT FORM FOR MAIN BUILDING WITH ROOF OF SYMPATHETIC OUTLOOK



IMPERIAL PALACE, PEKIN. MASS ACCENTUATED BY SITUATION OF DOUBLE ROOF



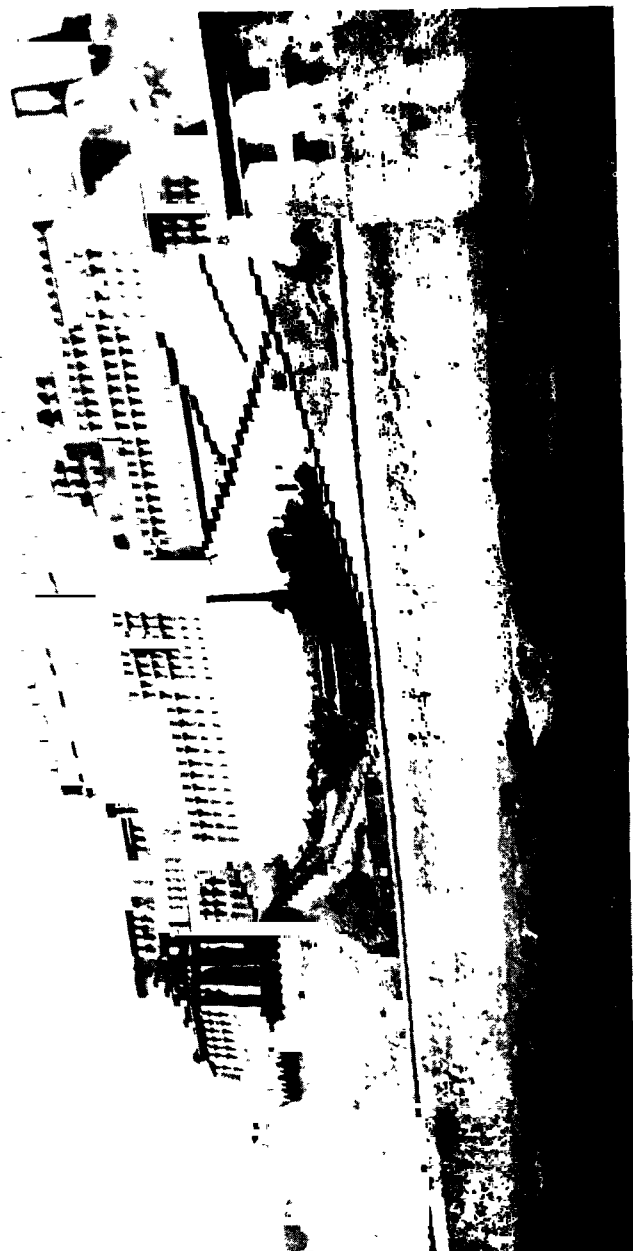
SUMMER PALACE, PEKIN. OCTAGONAL TOWER OF TELESCOPIC COMPOSITION RISING FROM SQUARE PODIUM WITH MONUMENTAL STAIRCASE



YASAKA PAGODA, KIOTO. VERTICAL COMPOSITION OF TOWER PRODUCED BY REPETITIVE HORIZONTAL FEATURES

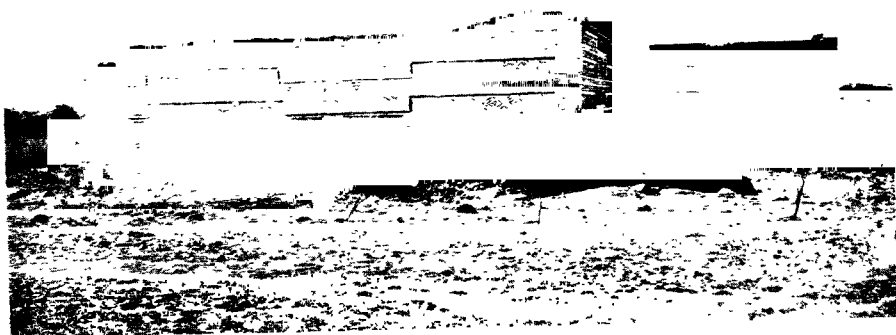


THE HŌ-ŌDŌ, UJI, JAPAN. THREE-PART GROUPING WITH ROOFS OF CENTRAL MASS ACCENTUATED

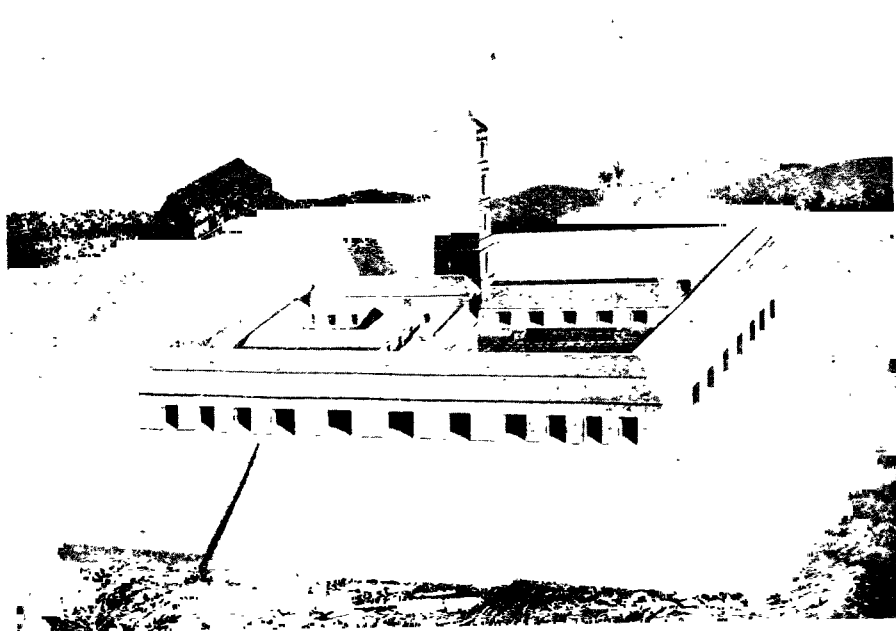


POTALA, LHASSA. A.D. SEVENTH EIGHTH CENTURY. HORIZONTAL EFFECT OF GROUPED FINESTRATION TO INDIVIDUAL MASSES
CONTRASTED WITH WALL SURFACES

The ensemble of the imposing fortress-like monastery is enhanced by freedom of grouping.



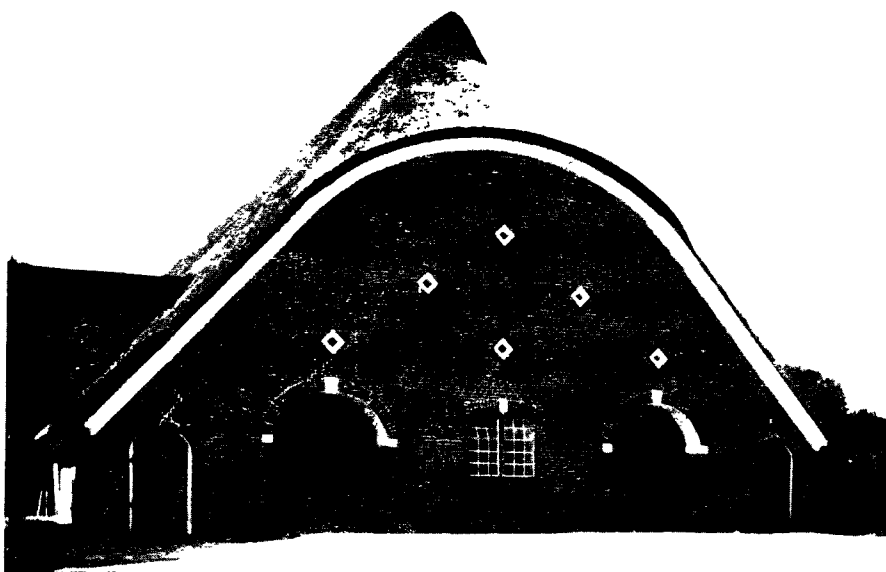
PALACE AT MITLA, MEXICO. COMPOSITION WITH HORIZONTAL THEME DOMINANT



PALACE AT PALENQUE, MEXICO (RECONSTRUCTED). MASS FORMED AS TRUNCATED PYRAMID. THE OPENINGS PROVIDE THE SUB-INTEREST

Chapter 8

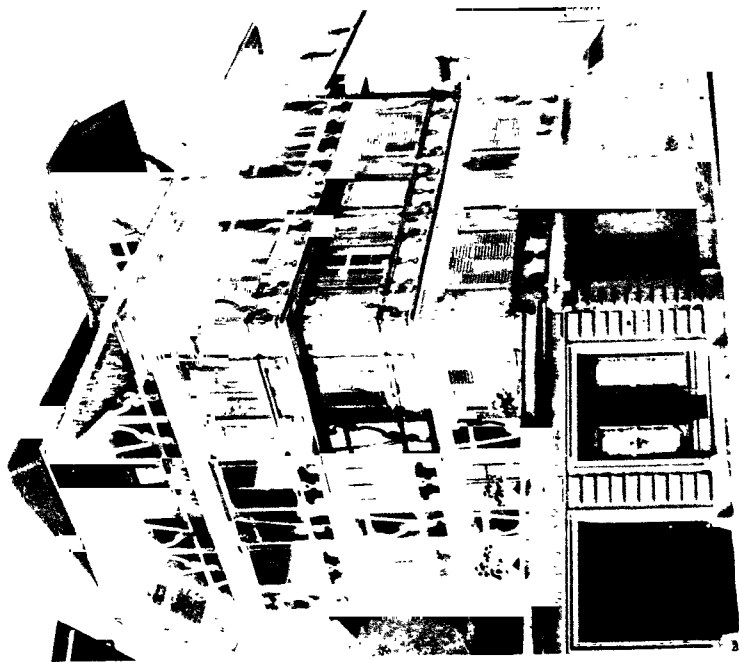
Picturesque Architecture



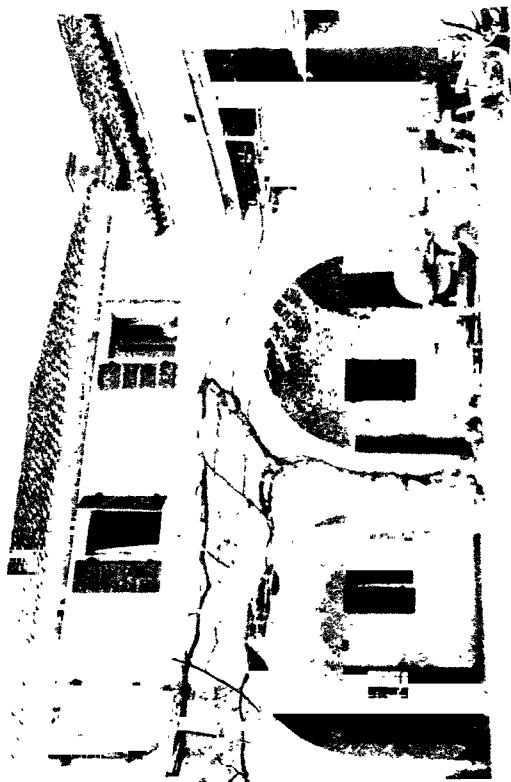
BARN, MADRENE, GERMANY. FORCEFUL SIMPLICITY OF ELEVATION SYMPATHETIC TO ROOF-LINE BUT CHANGED BY CURVATURE OF VERGE AT CENTRE



CHAILT, HANS BEI, ADEFLBODEN. GREAT SIMPLICITY OF SILHOUETTE NECESSITATED BY CLIMATIC CONDITIONS



HOUSE AT LUCERNE, TIMBER-CONSTRUCTED WITH DETAILS FANTASTICALLY SHAPED



FARMHOUSE IN VIGNETTA, CONTRAST OF PROPORTION BETWEEN ARCHES AND SMALL WINDOWS

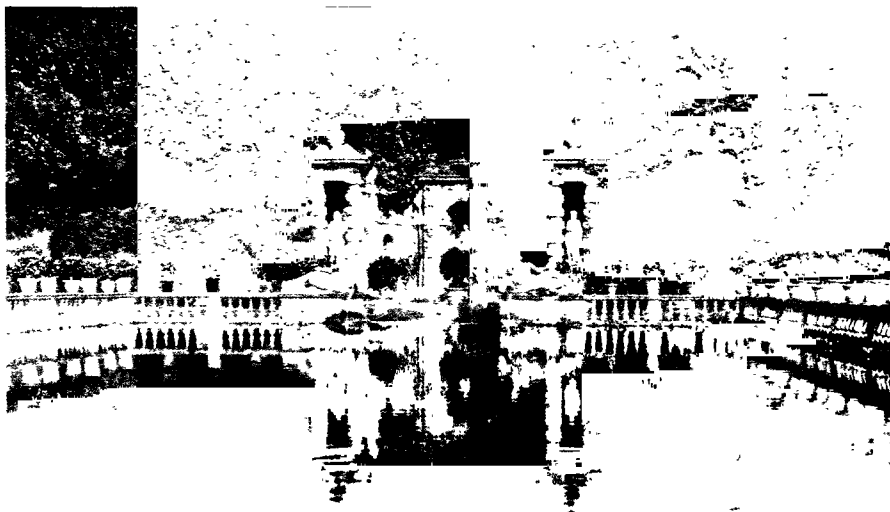




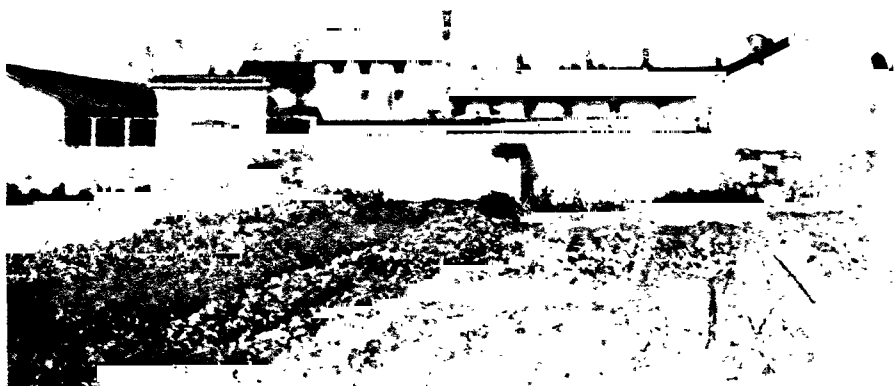
VILLA VALMARANA, LISIERA



CASINO AT CALDOGNO. PALLADIAN VILLA DEMONSTRATING ELASTICITY OF CLASSIC DESIGN



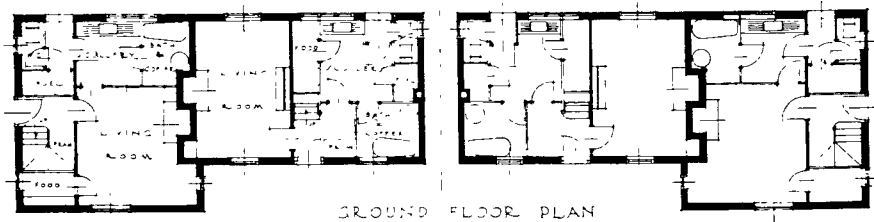
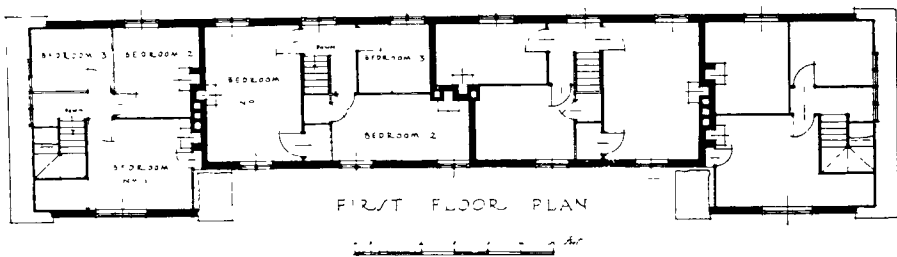
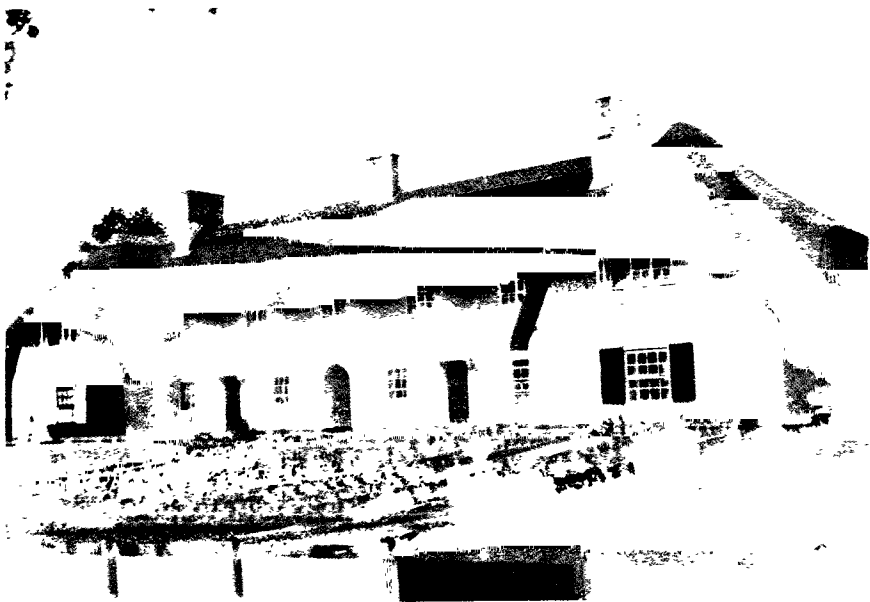
POOL IN LEMON GARDEN, VILLA MARLIA. BAROQUE GARDEN FEATURES INTRODUCED FOR SILHOUETTE AND REFLECTION PURPOSES



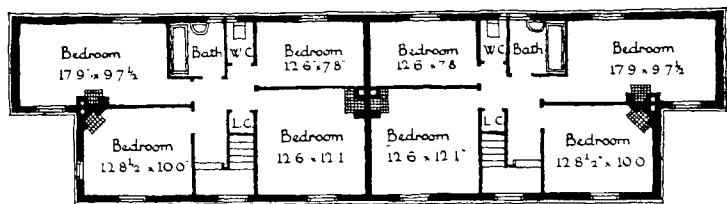
FARM GROUP AT PIEDMONT. BUILDINGS OF DISSIMILAR FORM LINKED BY WHITE WALLS AND DARK-TILED ROOFS

Chapter 9

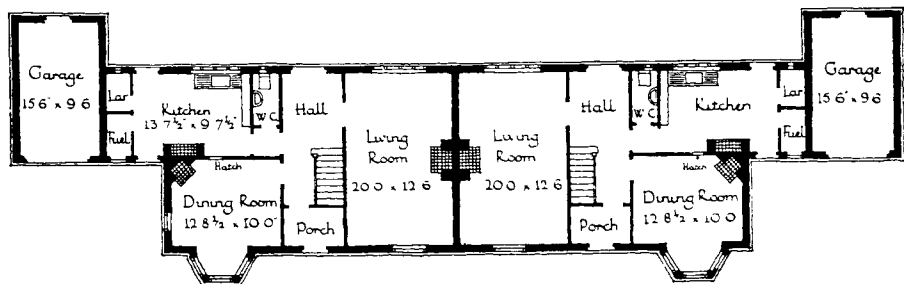
The Development of Contemporary Architecture



ECONOMIC COTTAGE PLANNING. CONTINUING TRADITIONAL ELEVATIONS
(W. Harding Thompson, A.R.I.B.A., Architect.)



FIRST FLOOR PLAN



GROUND FLOOR PLAN

COMPACT PLANNING WITH MODERNIZED VERSION OF THE GEORGIAN MANNER

(A. W. Kenyon, F.R.I.B.A., Architect.)



FRENCH EXAMPLES OF MODERN CHALETS IN THE SAVOIE
(Le Mème, *Architect.*)



(Le Mème, *Architect.*)



MEGÈVE. CIRCULAR ENTRANCE IN CON-
CRETE
(Le Mème, *Architect.*)



ARBOIS. MODERN PICTURESQUE DESIGN
IN THE SAVOIE
(Le Mème, *Architect.*)



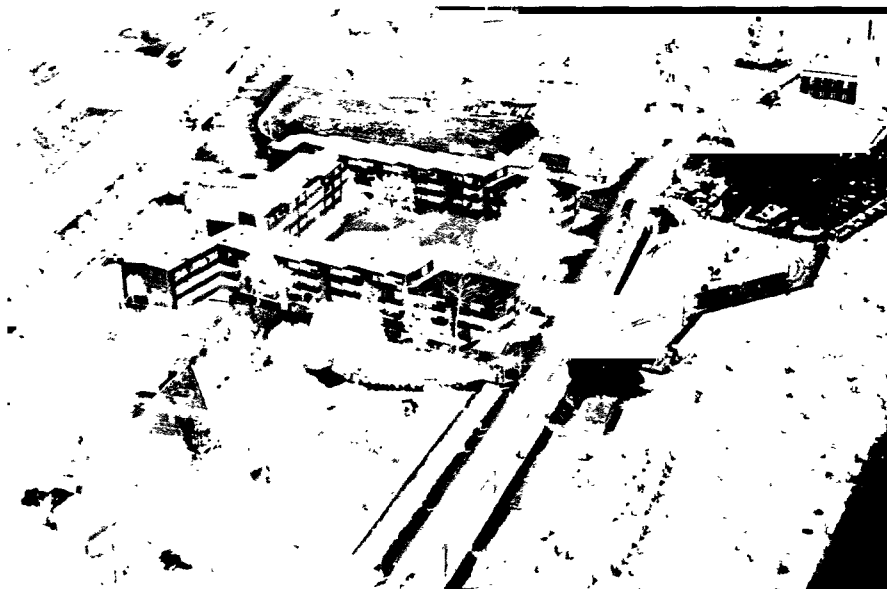
VILLA, GRANDCHAMPS. CONCRETE EMPLOYED FOR SMALL DOMESTIC BUILDING,
ADMITTING FREEDOM OF HORIZONTAL ELEMENTS
(Franz Jourdain and Andre Louis, *Architects.*)



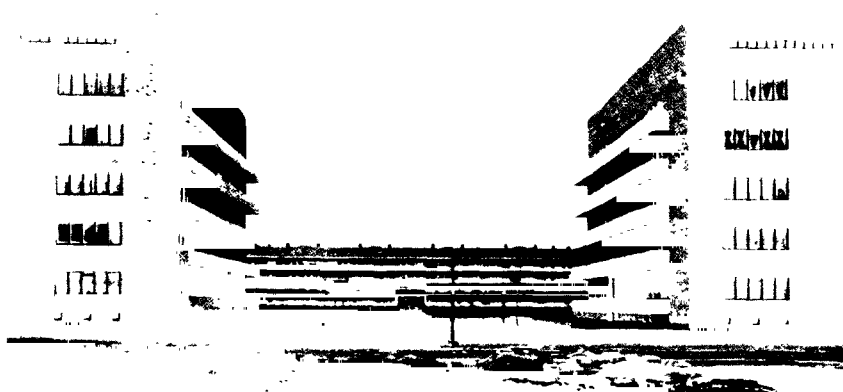
MODERN DWELLINGS, PARIS. ELEVATION ENRICHED BY VERTICAL BAY WINDOWS
(Michael Roux Spitz, *Architect.*)



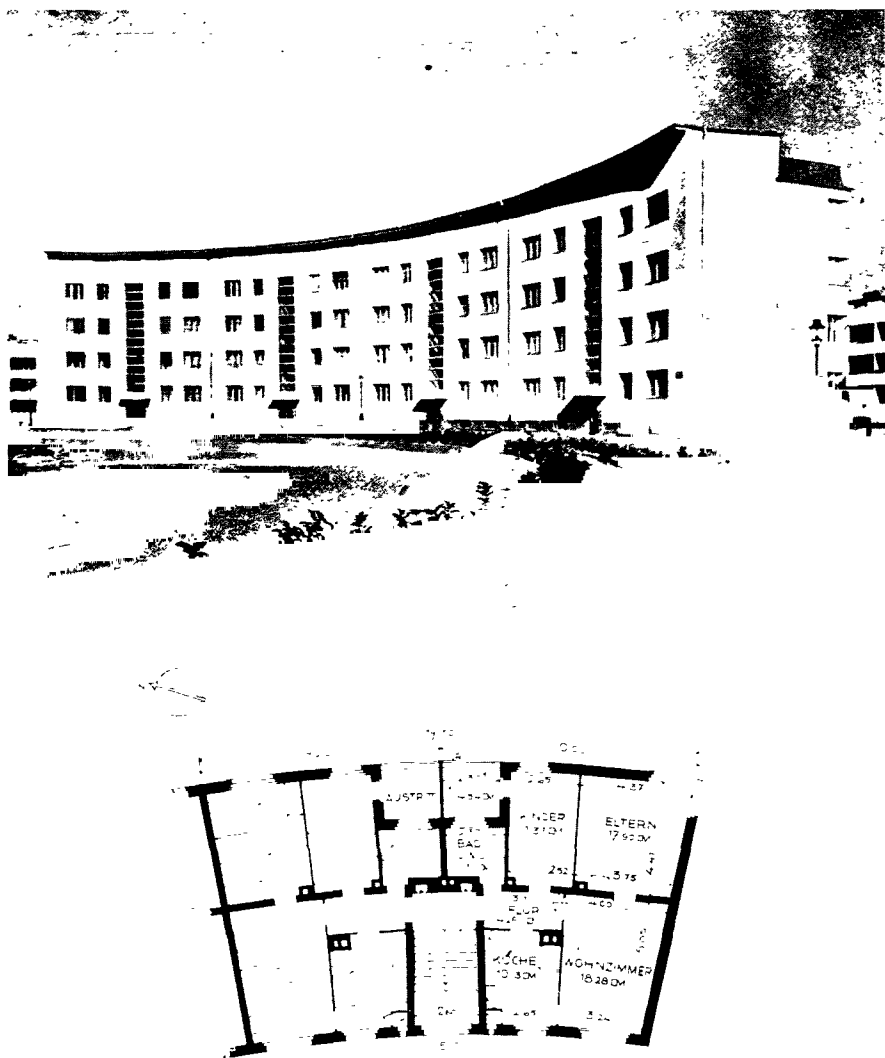
FLATS, STOCKHOLM. VERTICAL SUPPORTS ACCENTUATED. HORIZONTAL SUBDIVISIONS REDUCED TO A MINIMUM



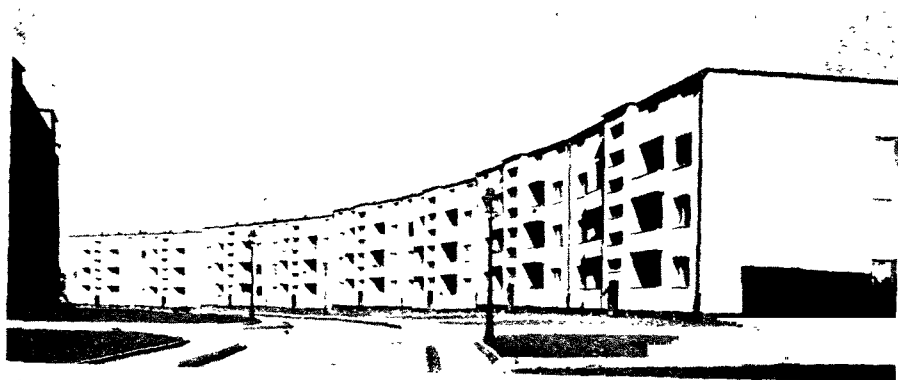
STOCKHOLM. AERIAL VIEW OF BELLAVISTA FLATS. SHOWING OPEN U-FORMATION OF GROUPING



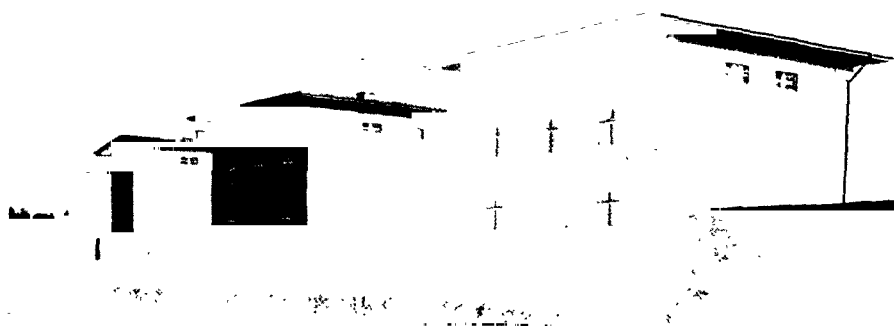
HAMBURG. ELEVATIONS ENRICHED BY BALCONIES IN HORIZONTAL FORMATION
(Karl Schneider, Architect)



STADTBÄURAT, LEIPZIG. DESIGN FOR WORKING-CLASS FLATS
 Curvilinear form assisted by contrast between fenestration of rooms and staircases.
 (A. D. Hubert Ritter, *Architect*.)



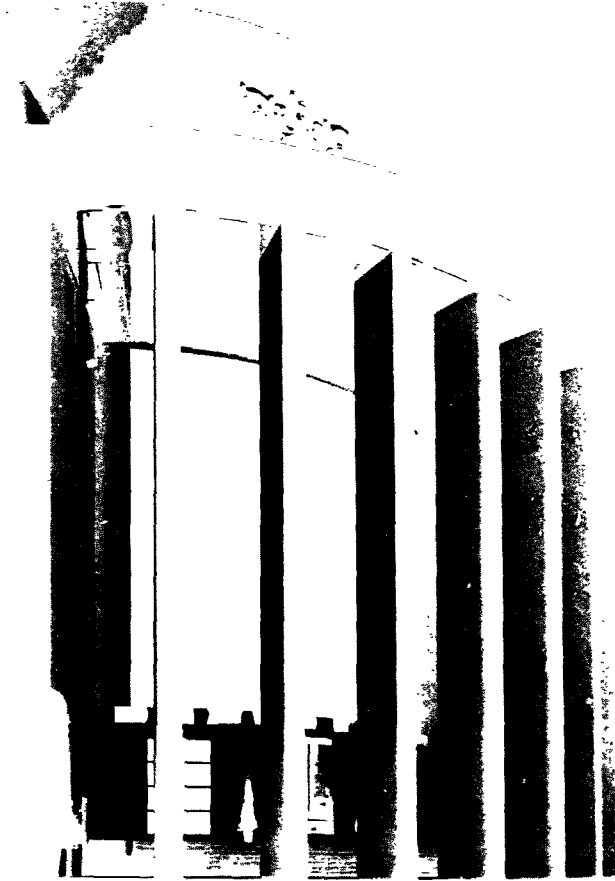
WORKING-CLASS DWELLINGS, BERLIN. REPETITION OF BAY WINDOW AND VERANDA GROUPING
(Paul Mebes, *Architect.*)



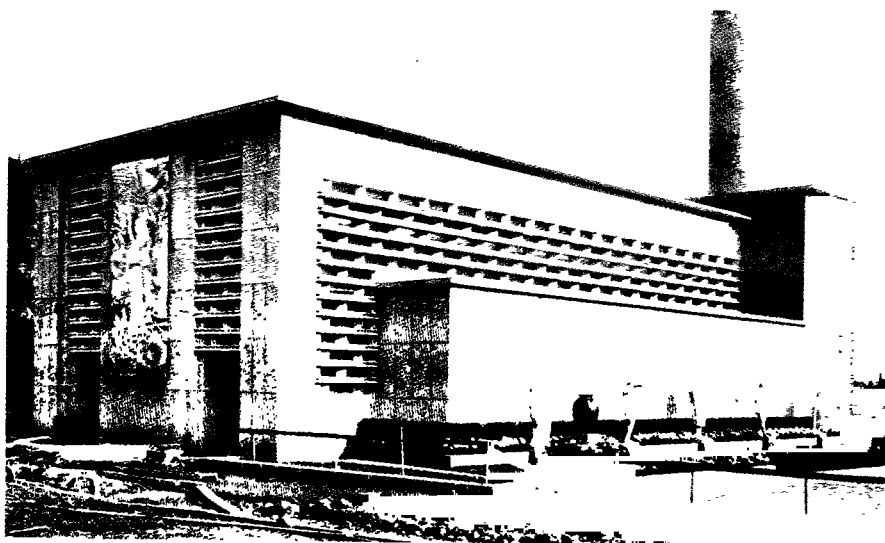
STADTBAURAT. GROUPING BY SMALL INDIVIDUAL UNITS CONNECTED BY WALL AT BASE
(Dr. Kuhn, *Architect.*)



THE CRYSTAL PALACE. FIRST BUILT 1851. ERIC LID LATER AT SYDENHAM
Composition of sympathetic forms arising from the adoption of iron and glass for structural elements. (Joseph Paxton, *Architect*)



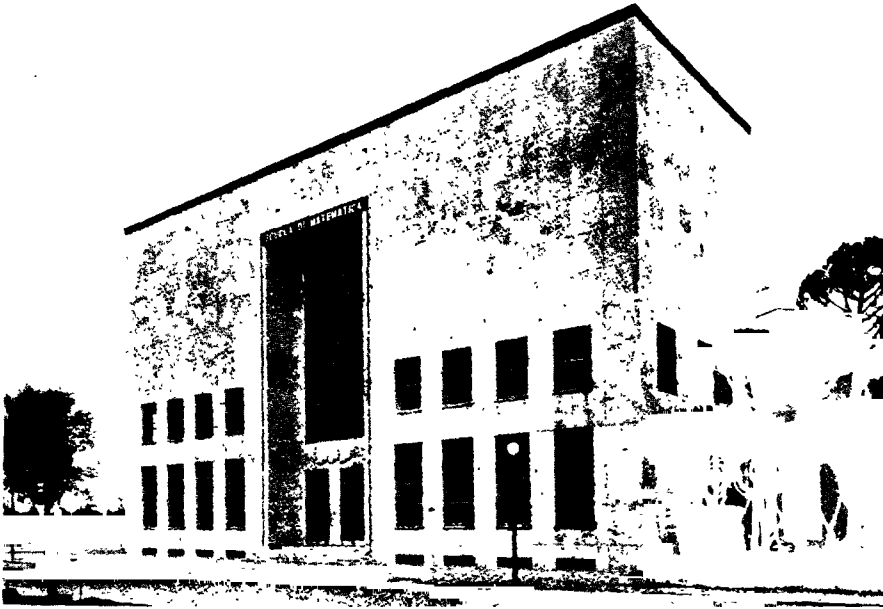
BRITISH PAVILION AT BRUSSELS EXHIBITION, 1936. CURVILINEAR EFFECT OF
SIMPLIFIED VERSION OF CLASSICAL COLONNADES
(H. Robertson, *Architect*.)



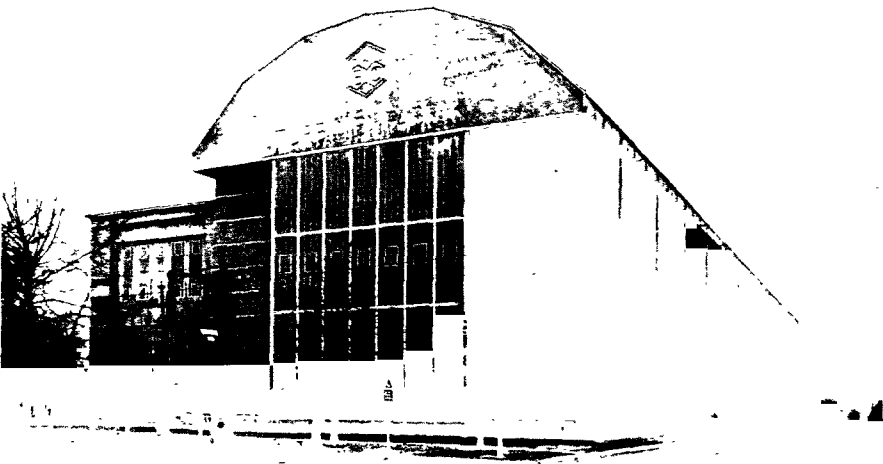
PAVILION DE LA VILLE, PARIS EXHIBITION, 1937. EXHIBITION BUILDING, SHOWING FENESTRATION FORMING PART OF SURFACE TREATMENT IN PERFORATED PATTERNING
(M. Azéma, *Architect.*)



ÉCOLE SUPÉRIEURE FOR YOUNG GIRLS, VERSAILLES. NOVEL CENTRAL ENTRANCE WITH GLAZED SCREEN AND CENTRAL DOOR
(M. Cagnart de Mailly, *Architect.*)



UNIVERSITY, ROME, SCHOOL OF MATHEMATICS. ELEVATION SHOWING FORCED SCALE OF CENTRAL FEATURE

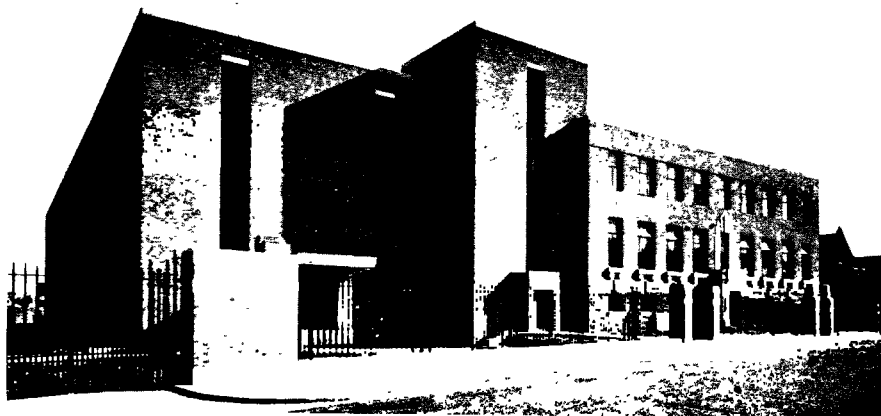


TURBINE FACTORY, BERLIN. ELEVATION EXPRESSING LINES OF INTERNAL STRUCTURE

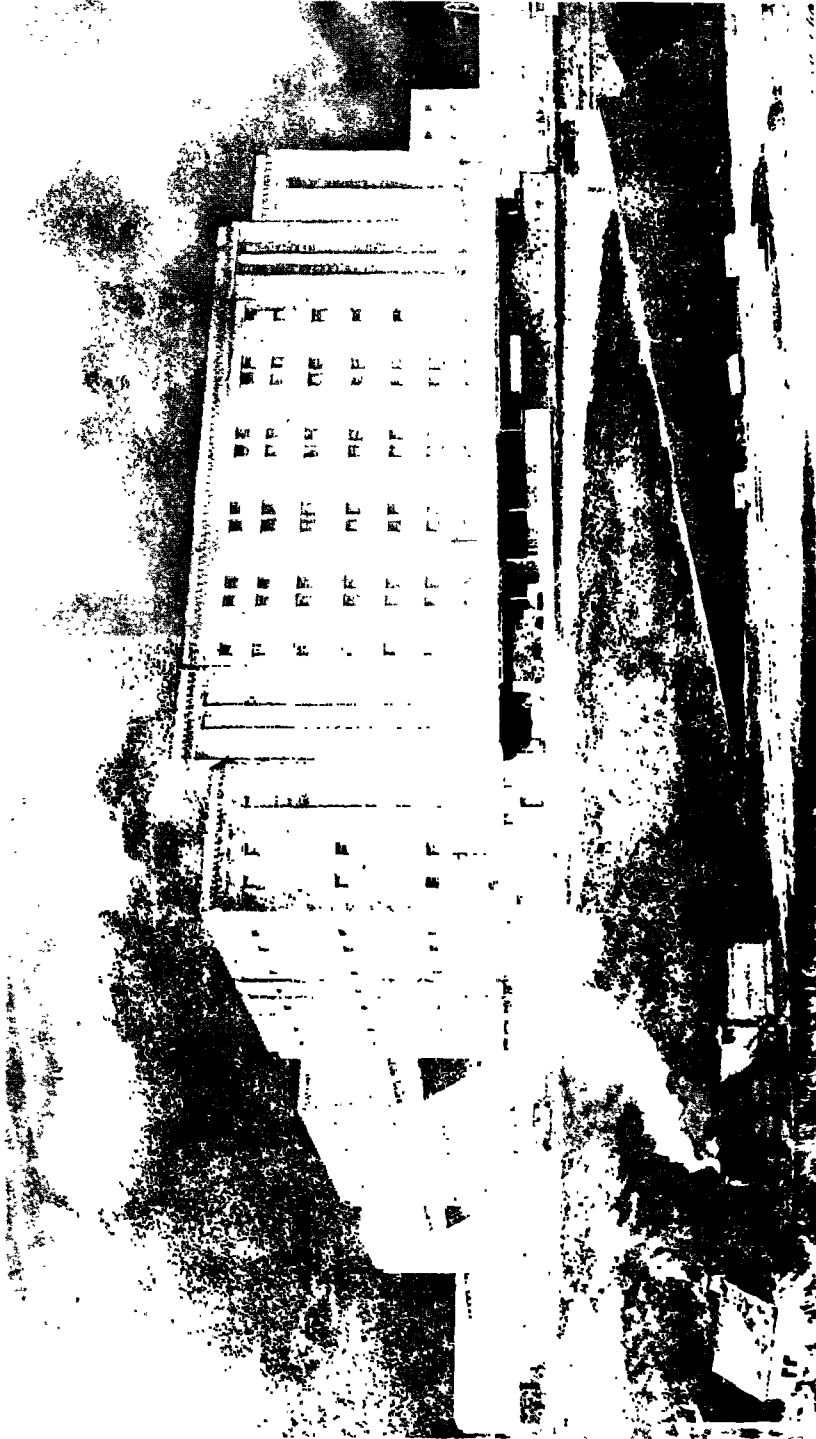
The contrast between roof silhouette at the large sashed window is the chief note. (Behrens, *Architect.*)



BANKING HALL, NATIONAL BANK OF SCOTLAND, EDINBURGH
(Thomas P. Marwick and Son, Architects.)

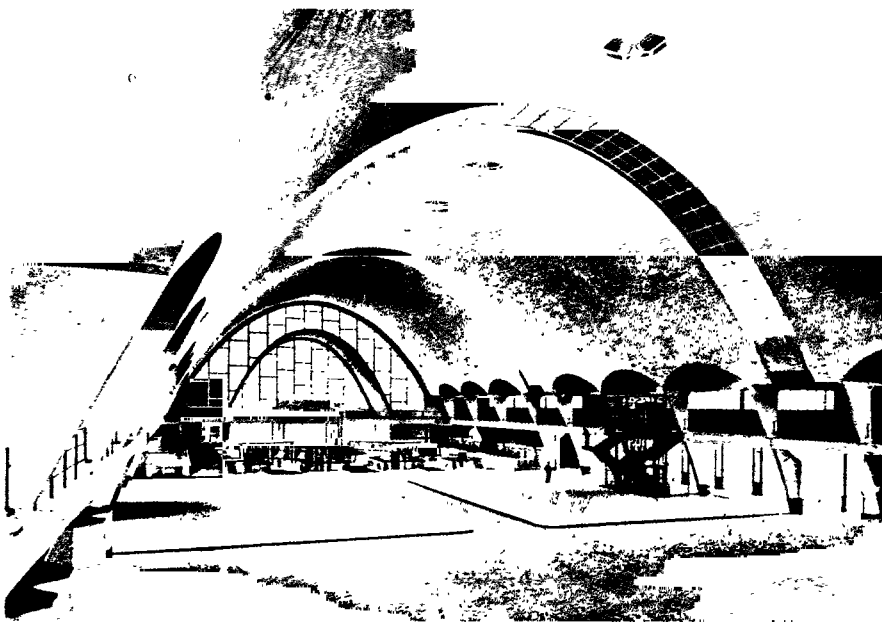


OXFORD UNIVERSITY PRESS WAREHOUSE, NEASDEN. ATTEMPT TO RECONCILE
MASSES OF SIMILAR FORM WITH OPPOSING FENESTRATION

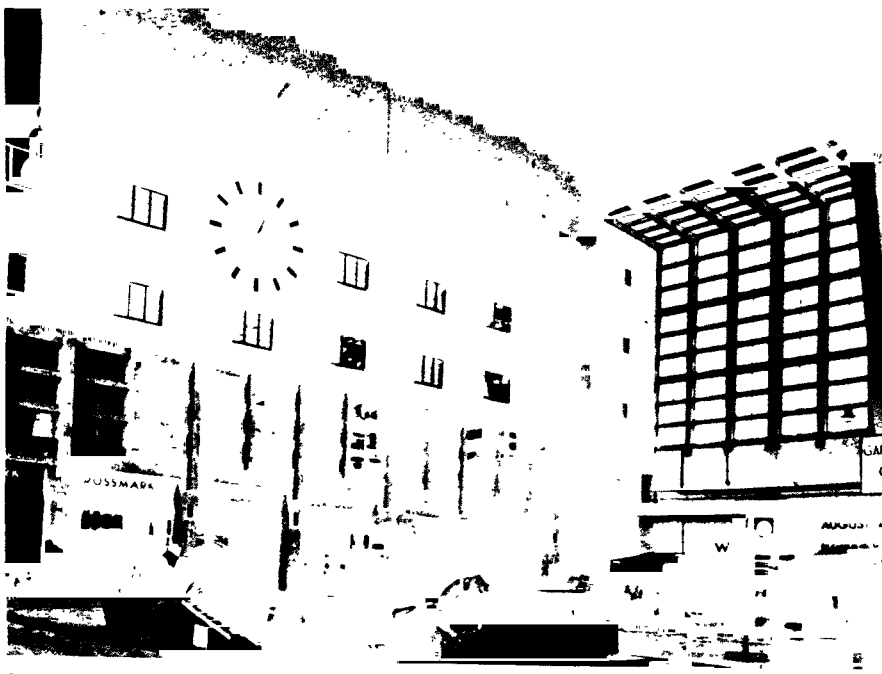


GUINNESS BREWERY NEW BRANCH, LONDON, 1936. CUBE SILHOUETTE FORMED OF LARGE MASSES OF BRICKWORK FINERATION REDUCED.

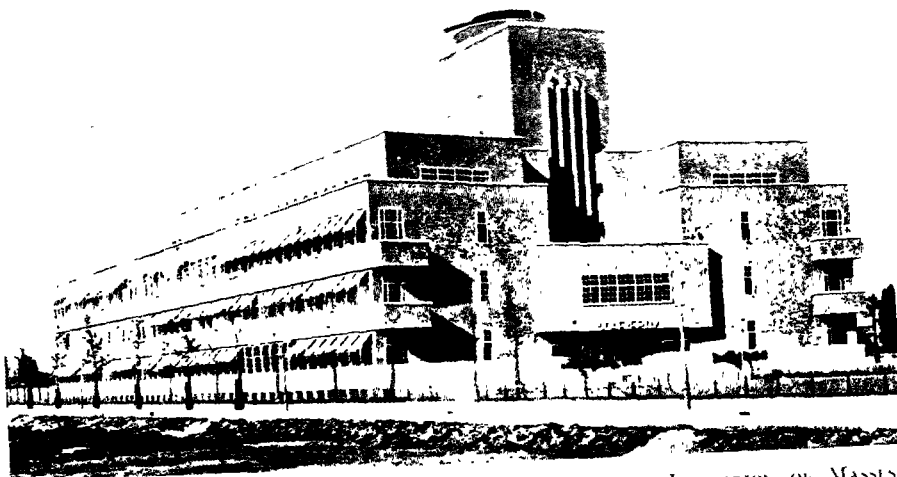
(Sir Giles Gilbert Scott, *Architect*.)



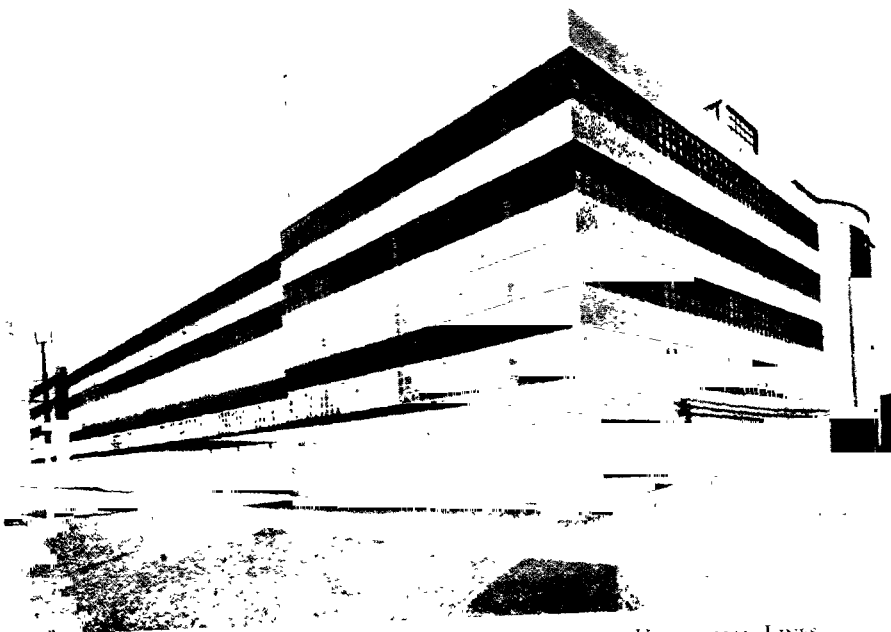
COVERED MARKET, RHEIMS. CONCRETE EMPLOYED TO FORM VAST VAULTING SYSTEM.
NOVEL LIGHTING BY MEANS OF CONCENTRIC STRIP GLAZING
(Maigrot, Architect.)



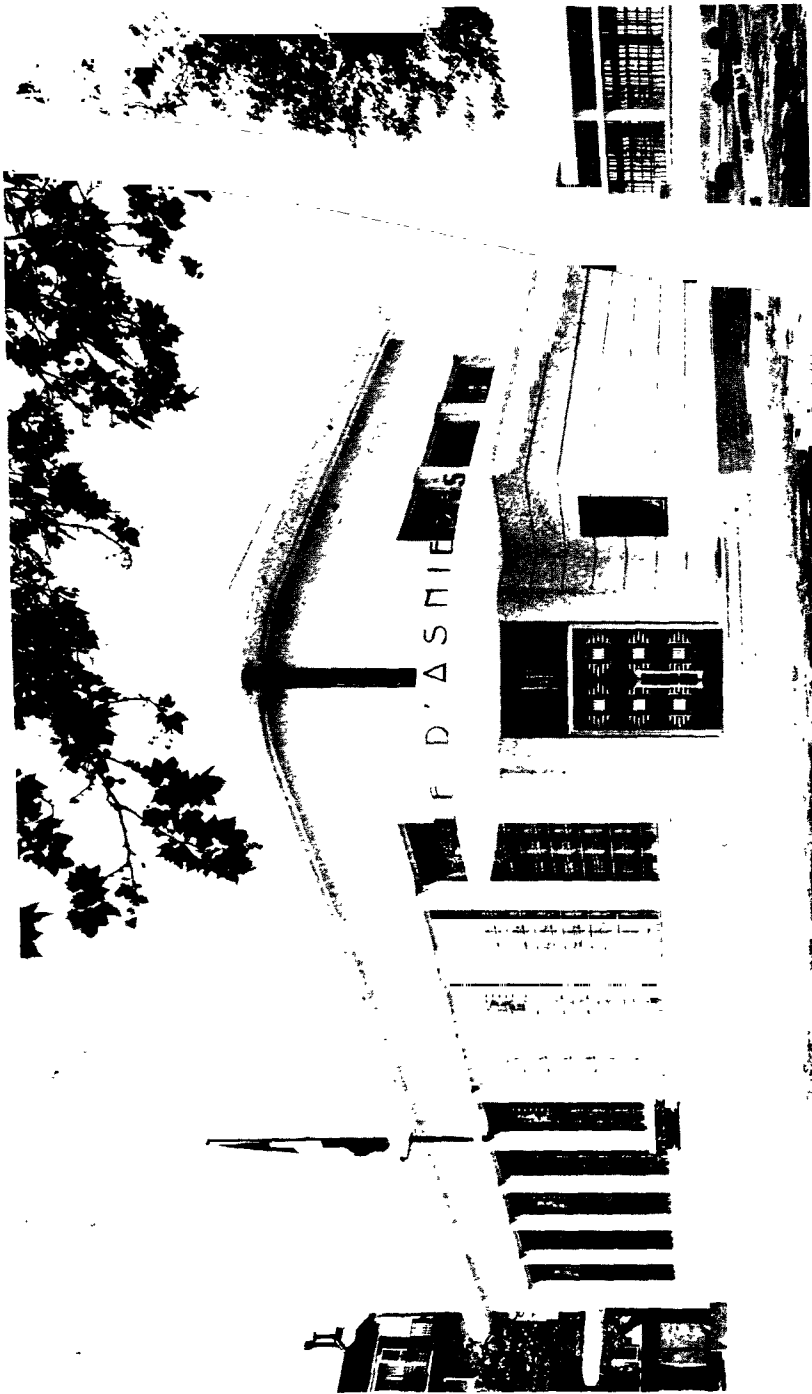
MARKET HALL, FRANKFORT. NOVEL CONCRETE DESIGN FOR END WINDOWS
AND VAULT SUPPORTS WITH INFILLING OF BRICK FOR SIDE WALLS



UNILEVER WORKS, ROTTERDAM, HOLLAND. CUBISTIC FORMATION OF MASSES
WITH TOWER. HORIZONTAL FENESTRATION DOMINANT
(H. F. Mertens, *Architect.*)

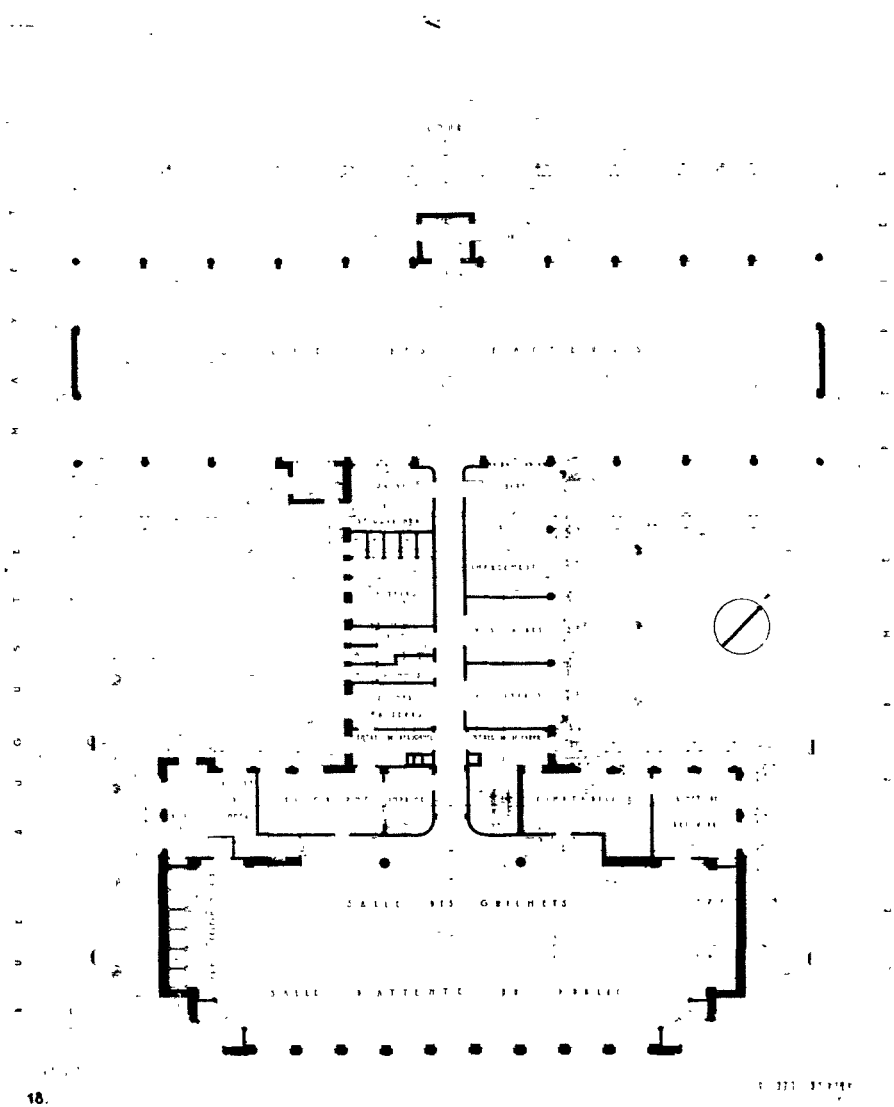


GARAGE IN VENICE. FORCED ACCENTUATION OF HORIZONTAL LINES



HOTEL DES POSTES, ASNIÈRES. FINISHES ARRANGED TO EXPRESS PUBLIC HALL. SIMPLICITY OF DETAIL ENHANCES BALANCED COMPOSITION

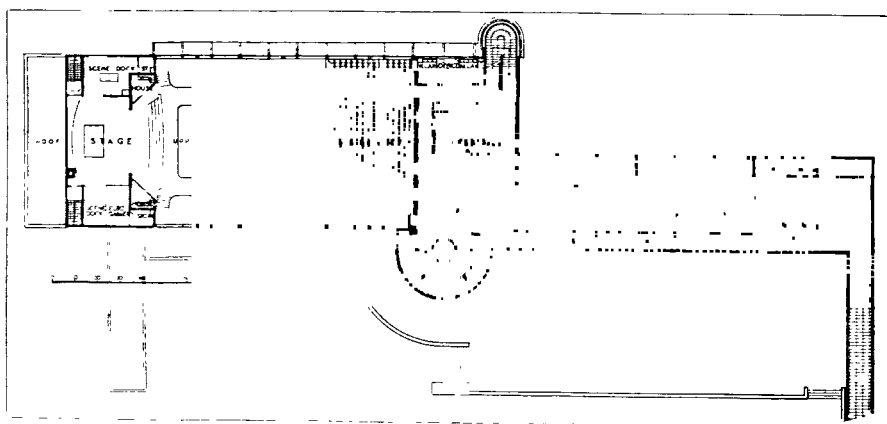
(J. Bukiet, Architect.)



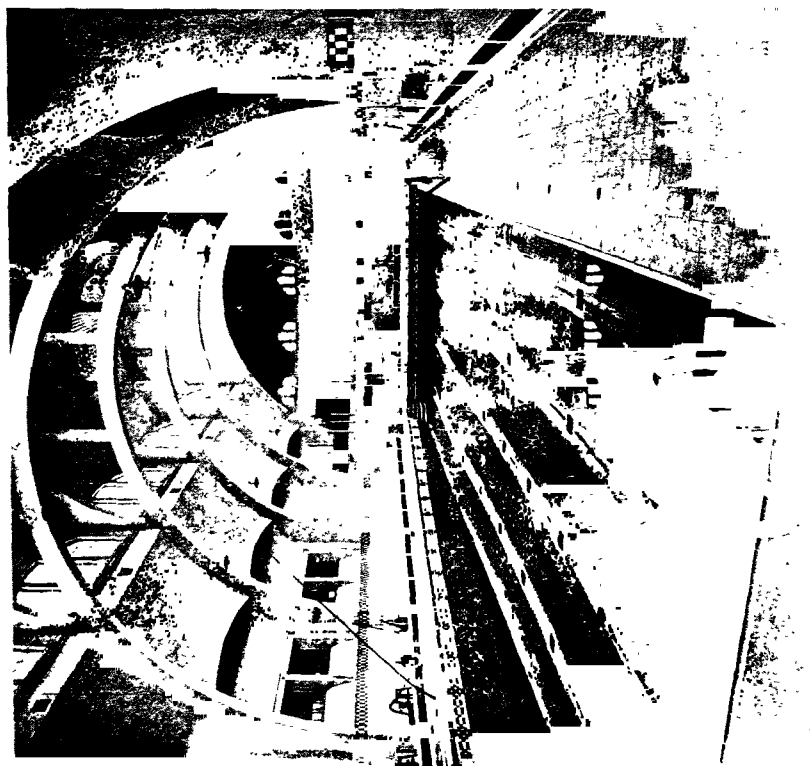
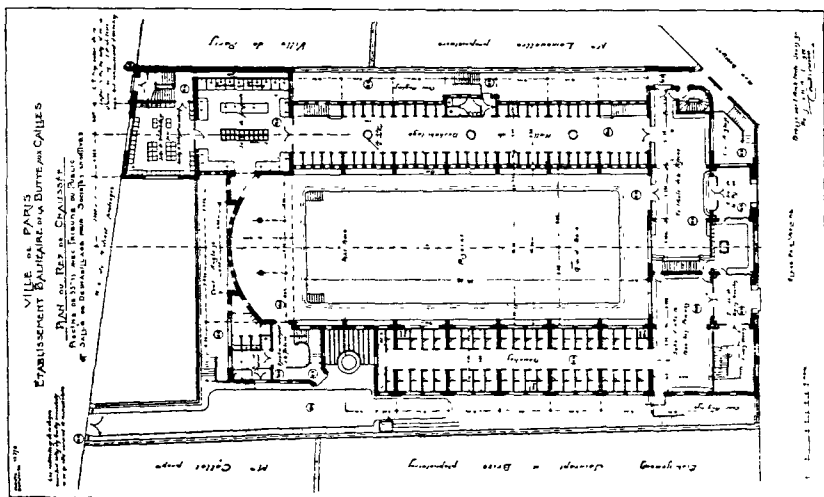
HÔTEL POSTEL, ASNIÈRES, PARIS
(J. Bukiet, Architect.)



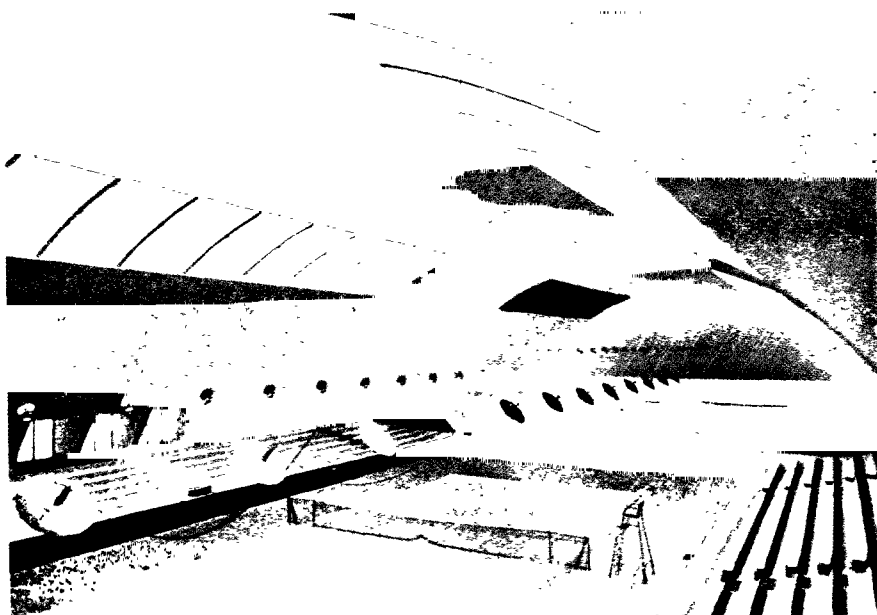
DE LA WARR PAVILION AND CONCERT HALL, BEXHILL-ON-SEA
(Mendelsohn and Chermayeff, *Architects.*)



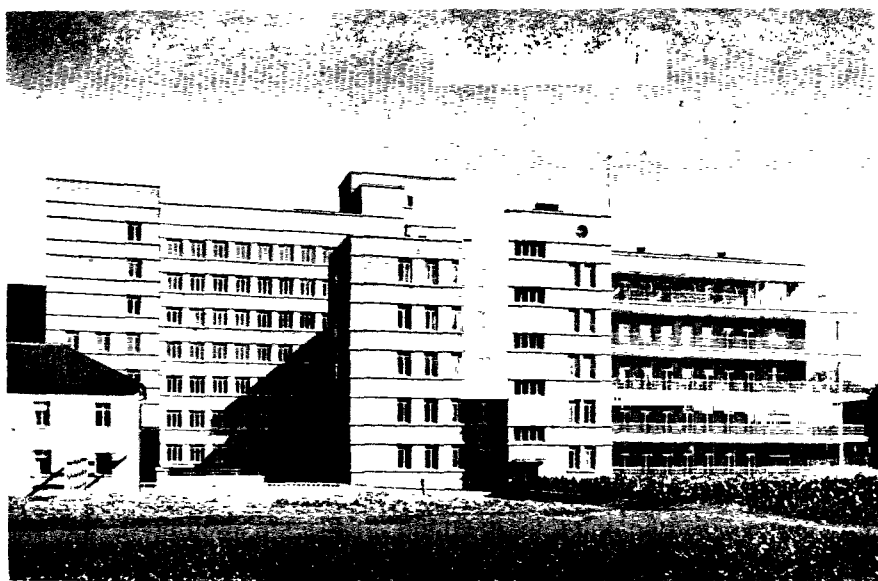
ASYMMETRICAL PLAN AFFORDING DEVELOPMENT OF EXTERNAL TERRACES



ÉPISCOPAT DE LA BUTTE AUX CAILLES, PARIS. CRUCK FRAM CONSTRUCTION IN CONCRETE ADMITTING CELL-STORY LIGHTING.
BALANCED PLAN FRAMING RECTANGULAR CENTRAL VOLUME.
(Louis Bonnier, *Architect.*)



COVERED TENNIS COURT, COPENHAGEN. CONCRETE CONSTRUCTION EMPHASIZED BY TREATMENT OF INTERNAL FENESTRATION



SURGICAL CLINIC, TUBINGEN UNIVERSITY. HORIZONTAL TREATMENT OF WINDOWS EMPHASIZED
(Hans Daiber, Architect.)



SURBITON HOSPITAL. AN EXPERIMENT IN HORIZONTAL MASSING.



SANATORIUM AT JANVILLE. DESIGN WITH RHYTHMICAL
REPETITION OF BALCONIES AND VERANDAHS IMPOSED BY THE
CONDITIONS OF THE PROBLEM

(Abraham and Le Meme, *Architects.*)



TADWORTH CHILDREN'S HOSPITAL, CONVALESCENT PAVILION. HOSPITAL
DESIGN. CHILDREN'S WING

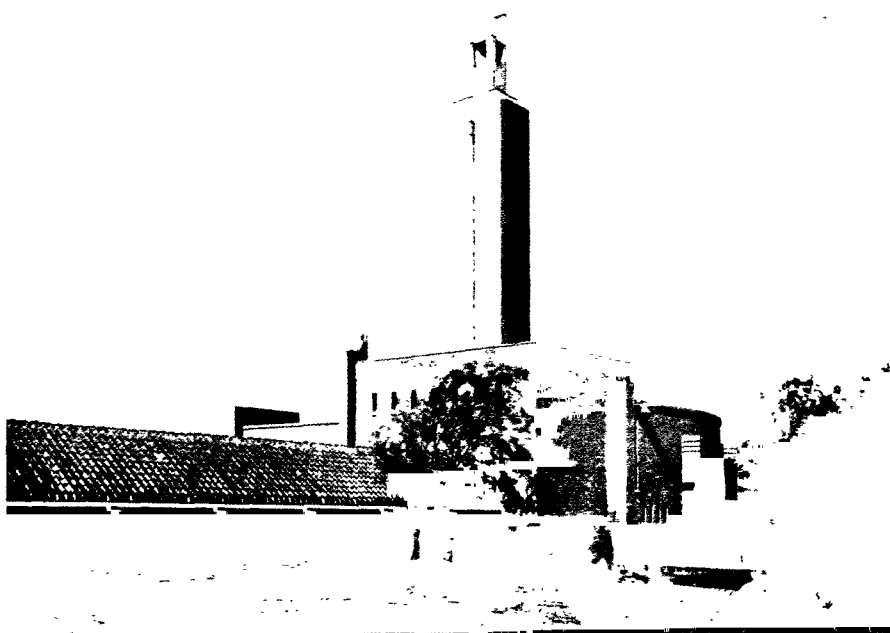
(H. Courtenay Constantine, *Architect.*)



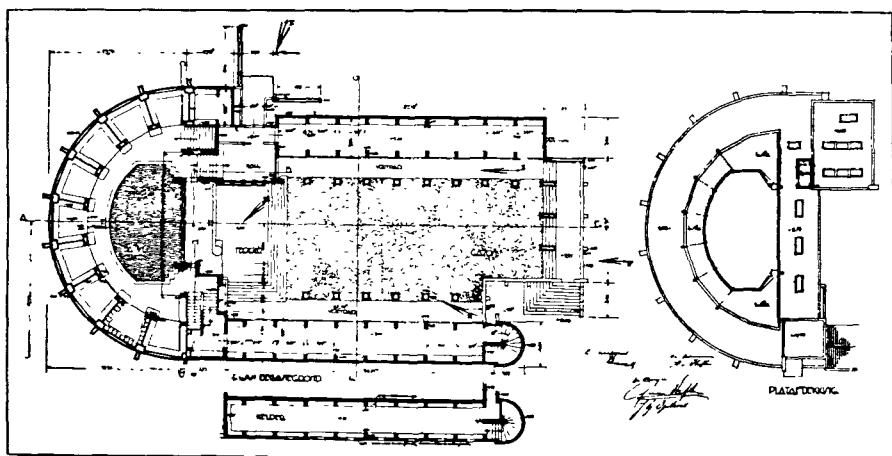
ST. MARIEN HOSPITAL, LUDWIGSHAFEN. BACK VIEW
Attempt to introduce modern character through massing of central tower and subordinate features.



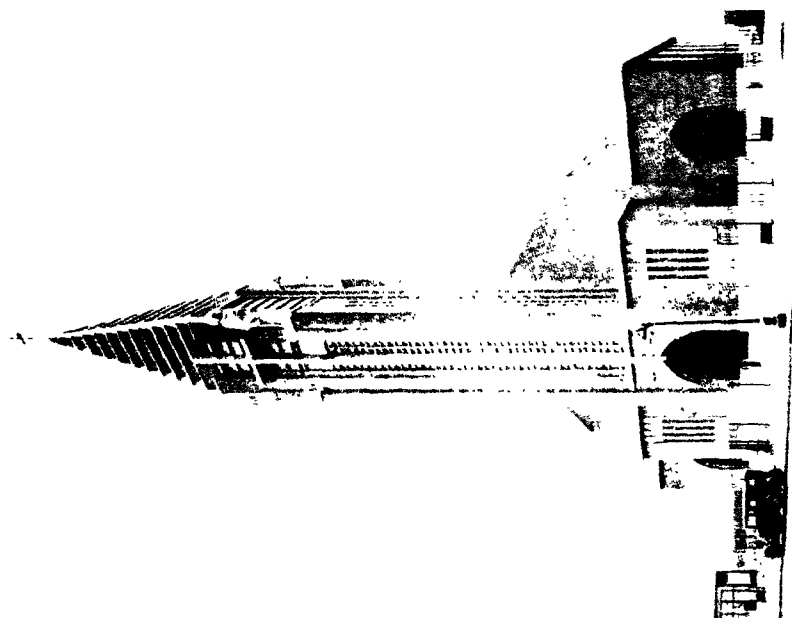
NEW BEAUJON HOSPITAL, PARIS
Wings terminating in tower form resulting from repetition of horizontal curved balconies.



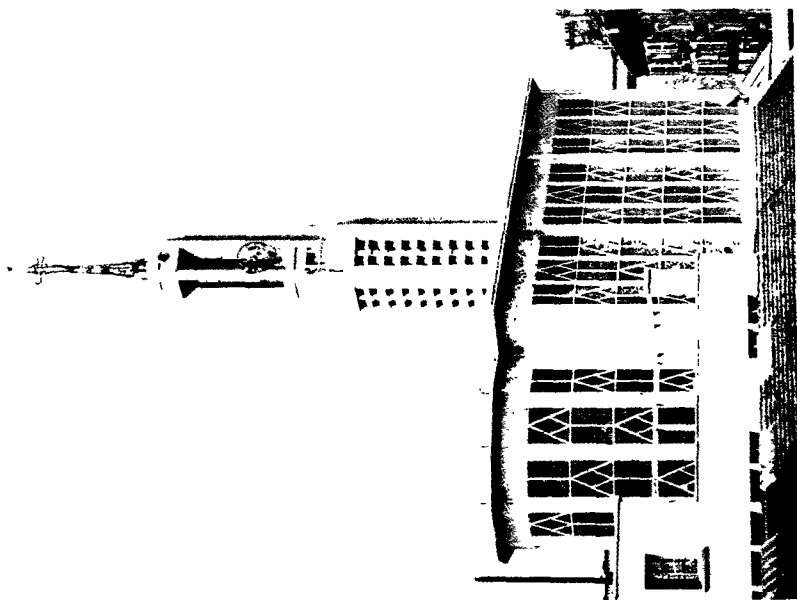
COLUMBARIUM TE WESTERVELD, HOLLAND



COLUMBARIUM TE WESTERVELD, HOLLAND. COMPOSITION OF TWO MAIN MASSES IN PLANNED ELEVATION ENSEMBLE CONTRASTING VERTICAL AND HORIZONTAL ELEMENTS
(W. M. Dudok, Architect.)



CHURCH OF ST. ANTOINE, PARIS. DESIGN RECALLING TRADITIONAL THAMES
(By Azema, *Architect*)



CHURCH OF ST. AGNES, PARIS. DESIGN ON WHICH BEAMS AND VERTICAL SUPPORTS ARE PROMINENT. SILHOUETTE OF TOWER REMINISCENT OF RENAISSANCE FORMS
(Brillaud de Lajardiere and R. Puthomme, *Architects*)

EXPERIMENTS IN CONCRETE

PART II

Chapter II

Decorative Composition

Classical, Mediæval and Early Renaissance

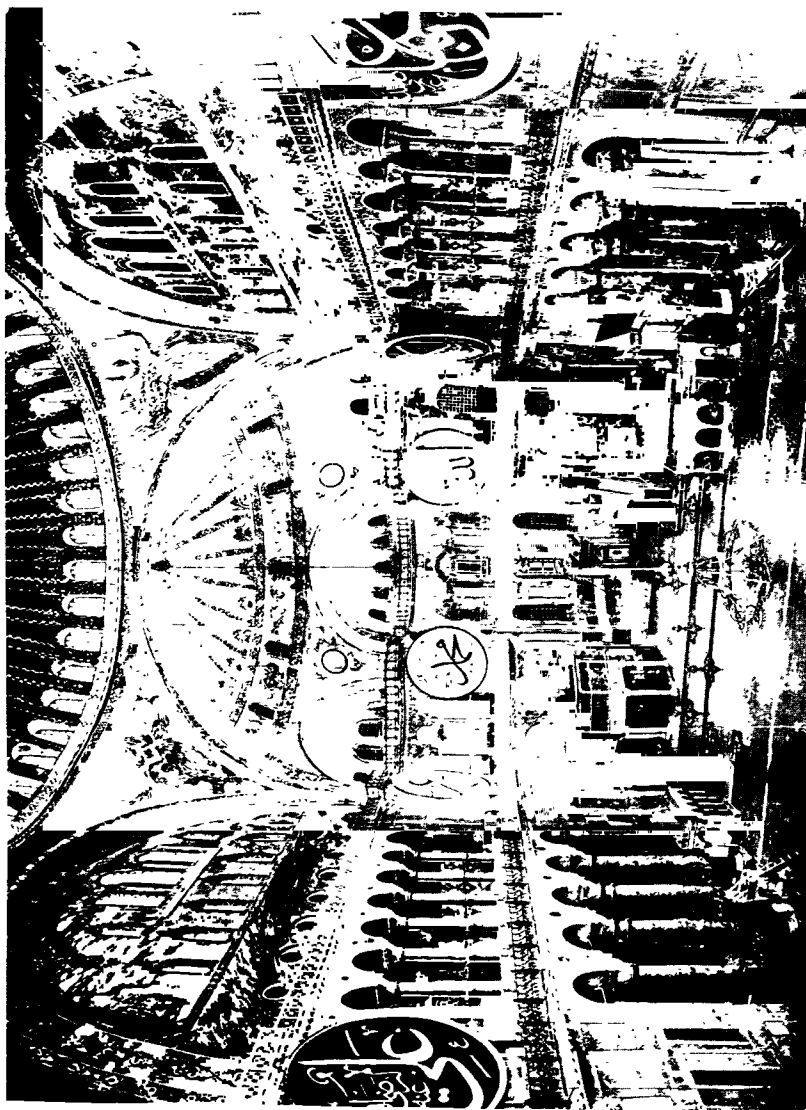


THE BASILICAN CHURCH OF S. PAOLO FUORI LE MURA, ROME, A.D. 330. DESIGN
DERIVED FROM THE ROMAN HALL OF JUSTICE, SHOWING CIERESTORY LIGHTING



PULPIT, CHURCH OF ST. JOHN, RAVENNA. MARBLE SUPPORTS OF SIMPLE DESIGN CARRYING RICHLY DECORATED RECTANGULAR PULPIT

The treatment of the mosaics in geometrical patterns provides the essential contrast and sympathetic sequence.



THE MOSQUE OF ST. SOPHIA, CONSTANTINOPLE. THE NAVE.

Internal effect of giant arches supporting dome on pendentives. The tiered arcades and windows piercing the tympana at the sides complete the comprehensive design.



PARAPET AT TORCELLO, A.D. 1168. CONVENTIONAL NATURALISTIC FORMS WITHIN A CLASSICAL FRAME
Theme related to early Mycenaean compositions.



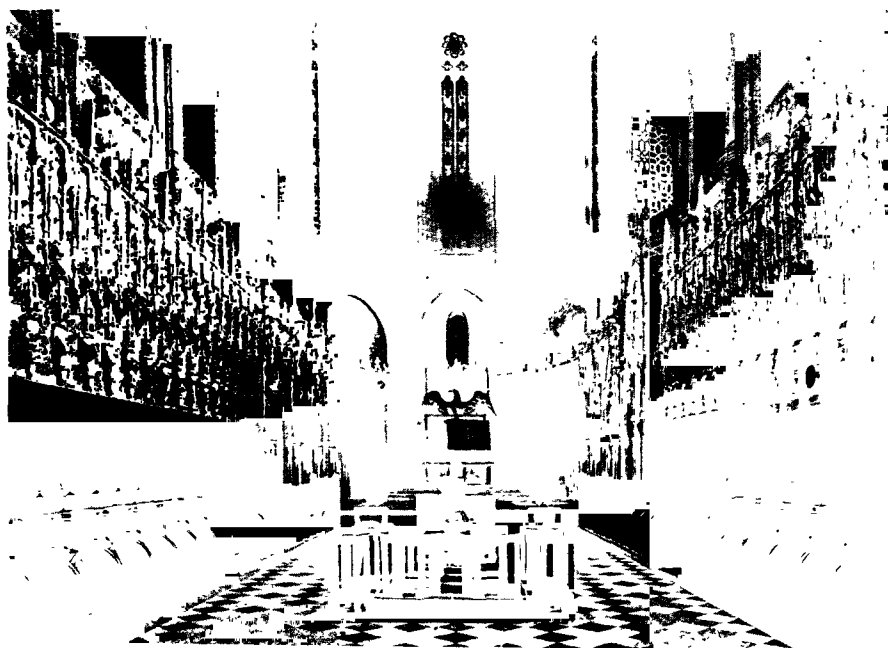
MONREALE CATHEDRAL, PALERMO, A.D. 1174. INTERIOR COMBINING VARIOUS INFLUENCES, NAMELY, BYZANTINE, SARACENIC AND ROMANESQUE



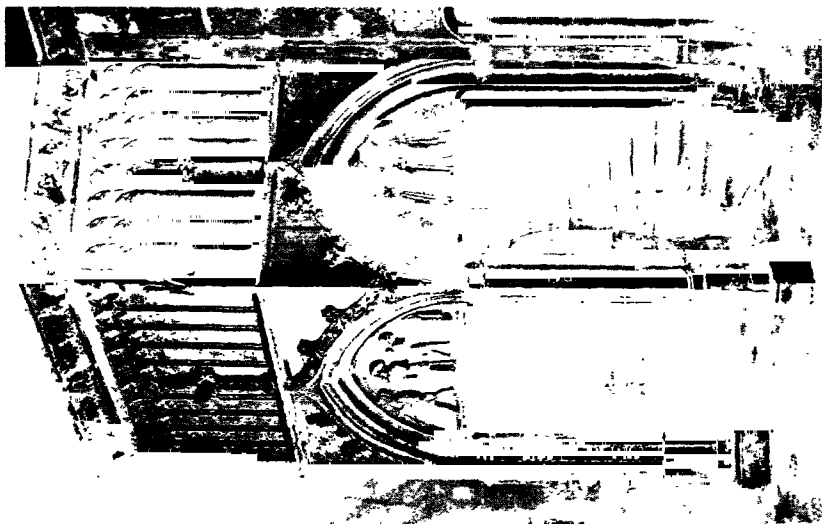
MONREALE CATHEDRAL



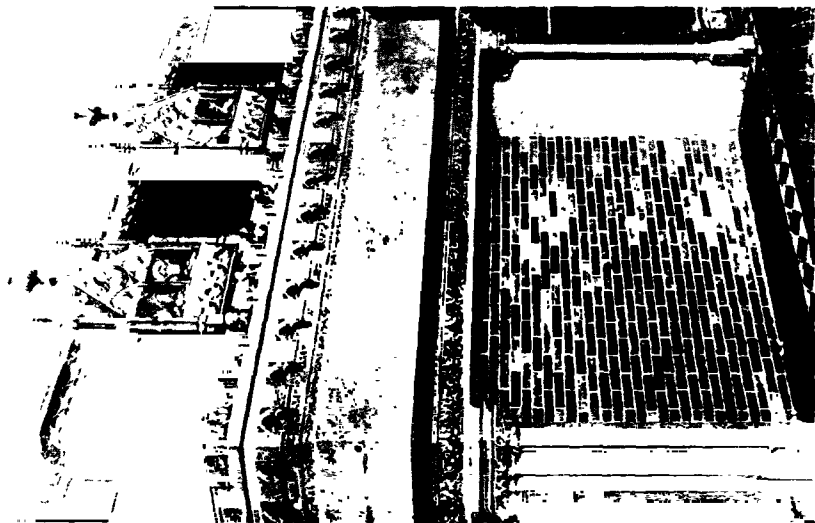
LA SAINTE CHAPELLE, PARIS, A.D. 1244-47. VAULTED INTERIOR TO CRYPT, SHOWING DECORATION OF STRUCTURAL FEATURES



CHOIR STALLS, CATHEDRAL OF STE. CECILE, ALBI, A.D. 1282-1512. STRUCTURAL INTEGRITY ENHANCED BY RICHNESS OF WOOD FITTINGS. EFFECT GAINED BY REPETITION OF BAYS OF STALLS



HOUSE OF JACQUES CŒUR, BOURGES.
FIFTEENTH CENTURY. TRIUMPH OF INTERNAL
PORCH



HOUSE OF JACQUES CŒUR, BOURGES.
FIFTEENTH CENTURY

The traditional hood over the chimney opening is decorated with a shaped corbel moulding and battlements. The twin niches mask the sloping top.



INTERIOR OF MUSEUM, ZÜRICH — END OF THE FIFTEENTH CENTURY. TYPICAL WALL TREATMENT



PENSHURST PLACE, KENT, A.D. 1388. AN EXAMPLE OF THE GREAT HALL OF THE
FOURTEENTH CENTURY, WITH SCREEN TO BUTTRESS AND FIREPLACE IN CENTRE OF FLOOR

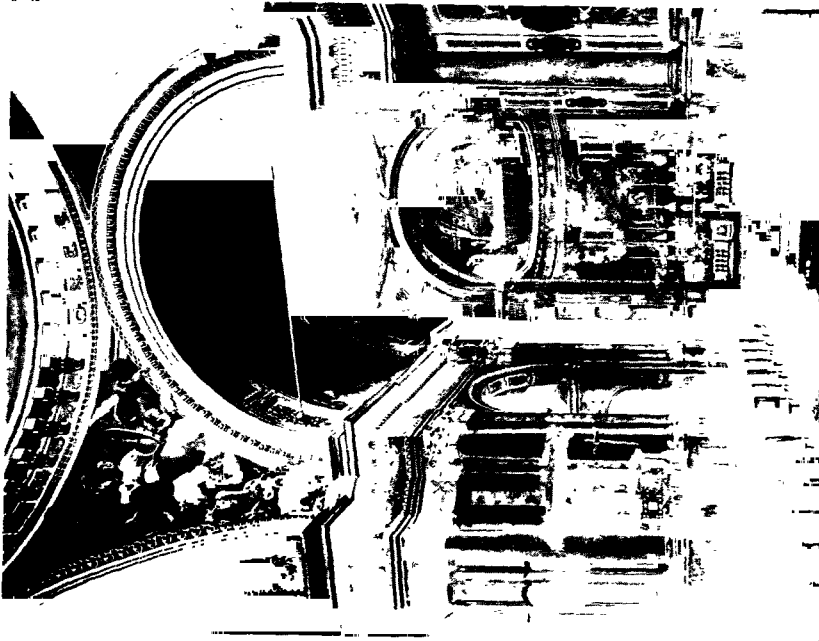
Chapter 12

Decorative Composition in Italy, France and Spain, Sixteenth to Nineteenth Centuries



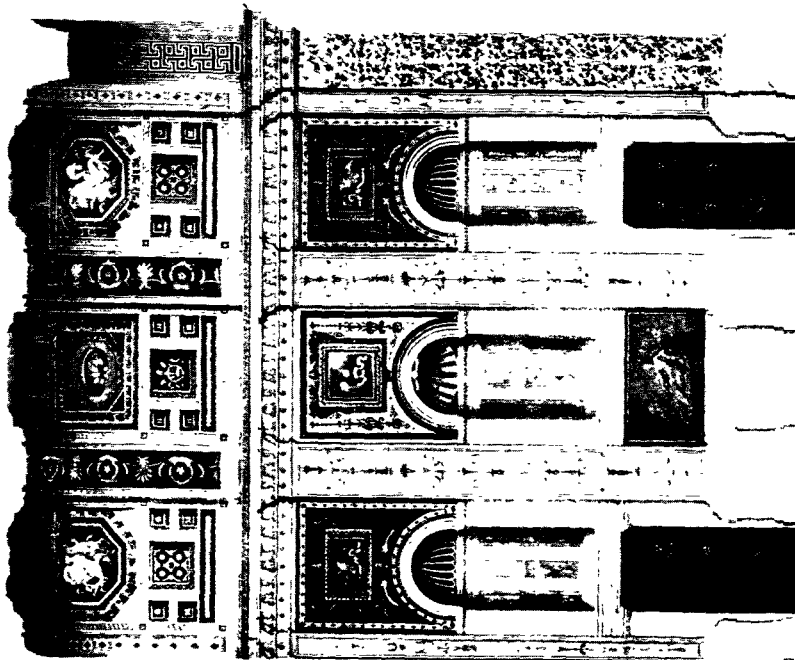
CHURCH OF THE MIRACLE, VENICE. THE RAISED SANCTUARY AND THE DOME OVER THE CHANCEL EMPHASIZE THE IMPORTANCE OF THE EAST END

Materials : Marble for walls and floor, timber framed into panels for barrel vault.



INTERIOR OF CHURCH OF S. ALESSANDRO, MILAN.
SKILLFUL VERSION OF A DOMED INTERIOR RISING FROM A RECT-
ANGLE. THE CORINTHIAN ORDER ENHANCES THE SOLIDITY
OF THE SUPPORTS

(Lorenzo Binaghi, *Architect.*)

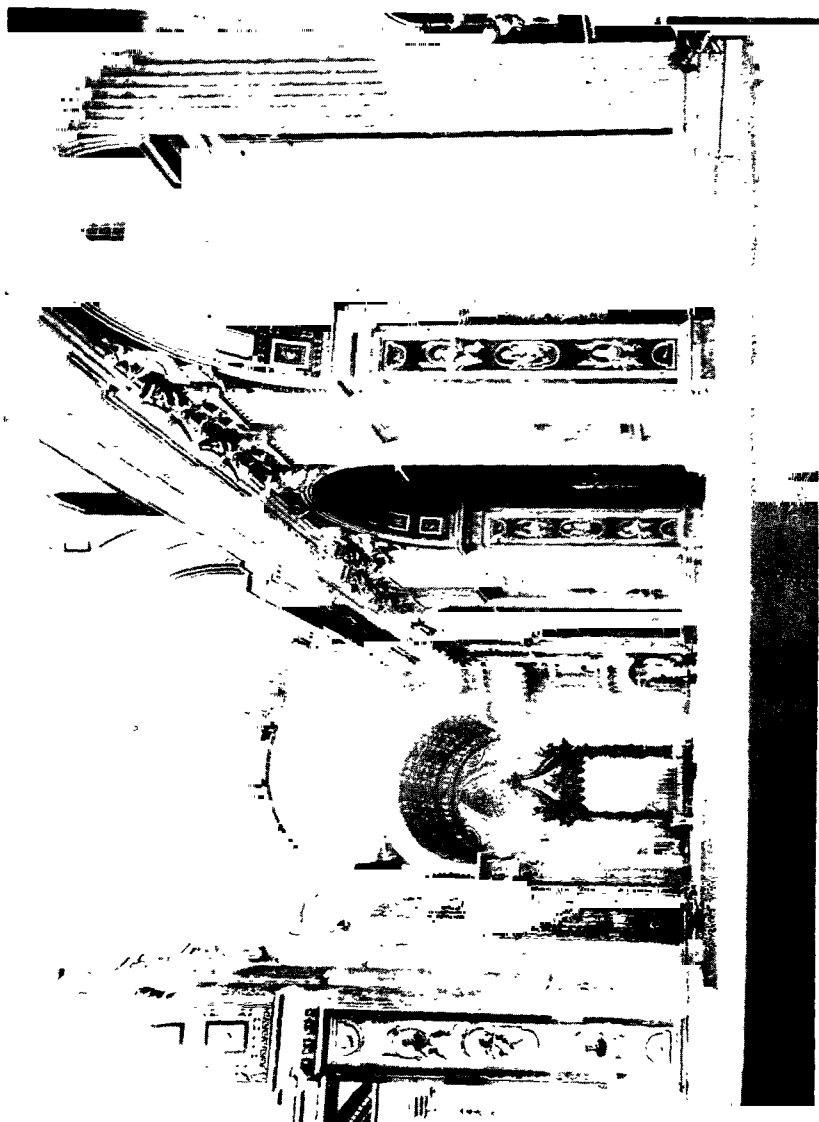


VILLA MADAMA, ROME. PAINTED ARABESQUE DECORATION IN
IMITATION OF STONE FORMS



DUCAL PALACE, VENICE FIFTEENTH CENTURY INTERIOR WITH ADDITIONS OF THE SIXTEENTH AND SEVENTEENTH CENTURIES

Two-fold division of vertical planes, upper one painted leading to ceiling which is Baroque.



ST. PETER'S, ROME. VIEW OF INTERIOR SHOWING CROSSING AND BALDACHINO
Repetition of arcade treatment on the giant scale.



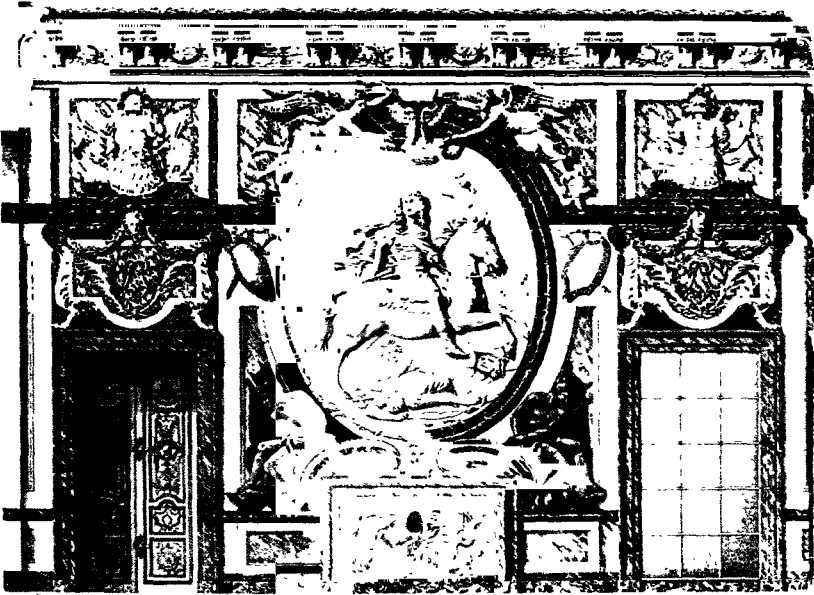
GALLERY OF FRANÇOIS I, FONTAINEBLEAU, A.D. 1530. ONE OF THE RARE EXAMPLES OF EQUAL DIVISIONING OF WALL DECORATION, NAMELY, PANELS BELOW, AND PAINTINGS AND SCULPTURED ORNAMENT ABOVE.

Ceiling panels in wood contained within lines of transverse beams, 120 feet long, 20 feet wide, 20 feet high. (By Il Rosso.)



GALLERY OF HENRI II, FONTAINEBLEAU. CONTRAST IN TONE BETWEEN LIGHT WALLS AND RICHLY PANELLED COFFERED CEILING WITH DEEP FACETS

The rich decoration of the spandrels between the arched bays softens the junction between the main features of the design. (Decorated by Philibert de l'Orme and Primaticcio.)



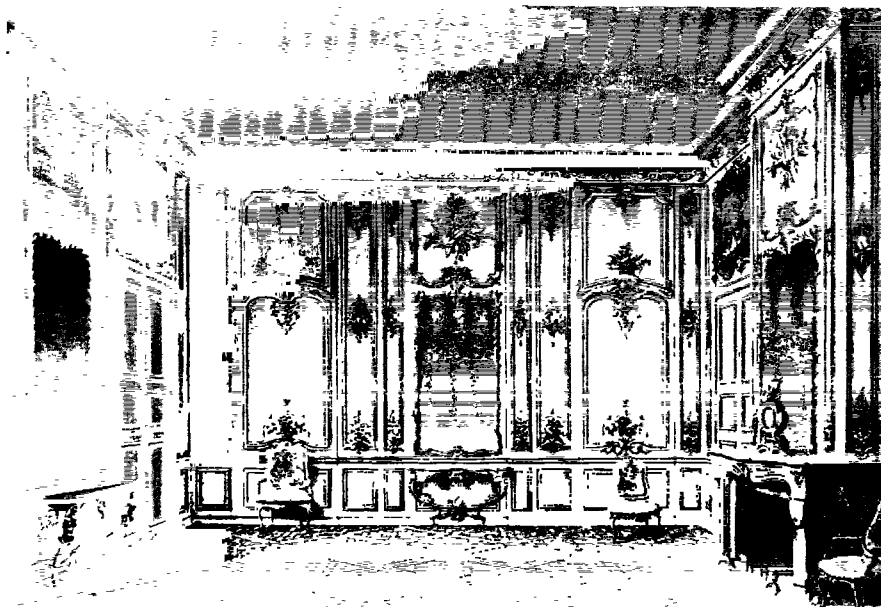
SALON DE LA GUERRE, PALAIS DE VERSAILLES. STYLE OF LOUIS QUATORZE

Treatment of fireplace and large oval panel forms central feature. Minor interest consists of curves sympathetically treated.



ORATORY, PARIS. STYLE LOUIS TREIZI

Miniature pilasters framing panels with arabesque decoration above frieze consisting of panels containing painted subjects. Door attempts to combine both divisions of wall treatment.



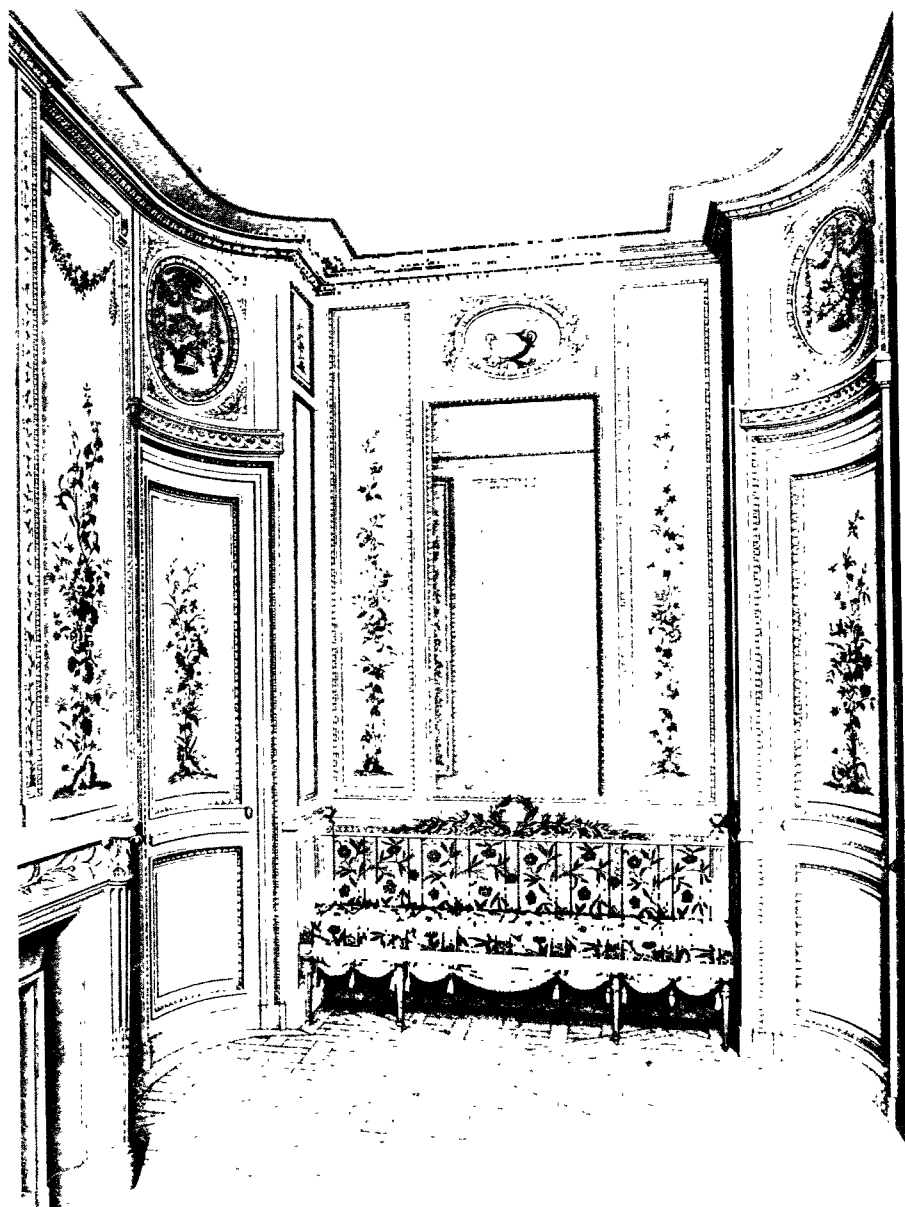
MUSIC-ROOM. STYLE LOUIS QUINZE

Vertical subdivisoning of walls into bays and pilasters. Floral ornamentation within curvilinear frames.



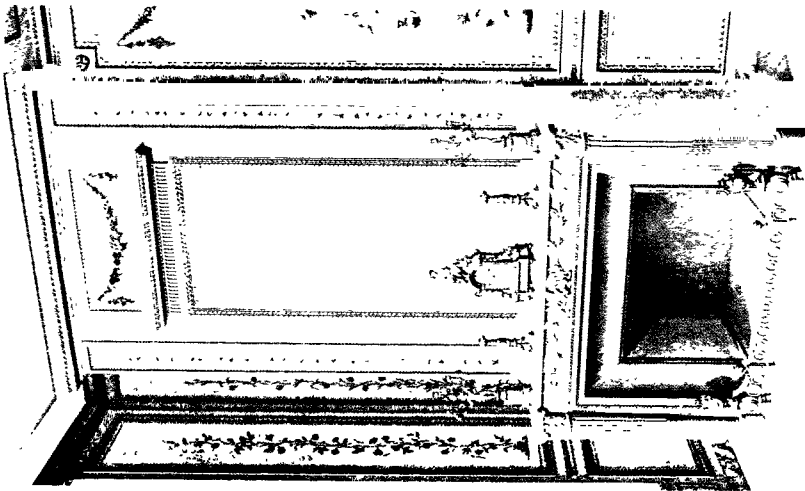
VIEW OF BEDCHAMBER. STYLE LOUIS QUINZE

Formal treatment of wall-panelling in wood with recess for bed.



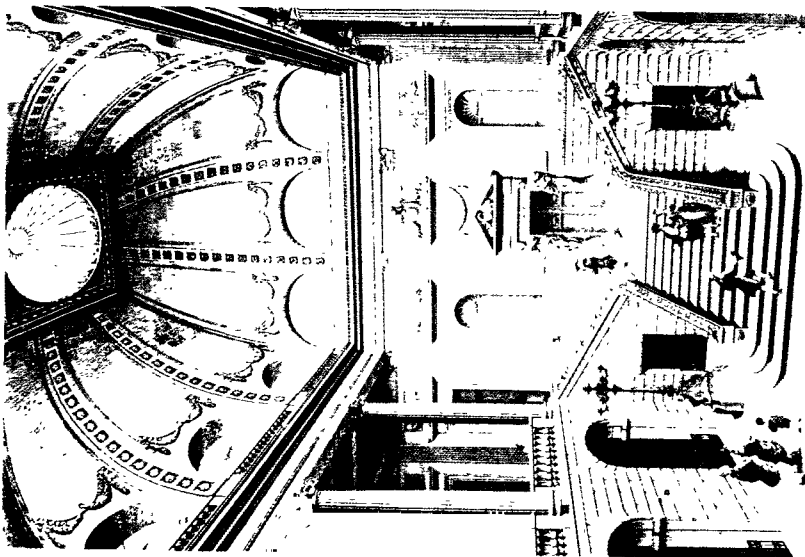
HÔTEL PIGANEAU, BORDEAUX. STYLE LOUIS XIV

Curvilinear features in plan. The decorated panels, oval and circular superpostes and low marble fireplaces are characteristic.



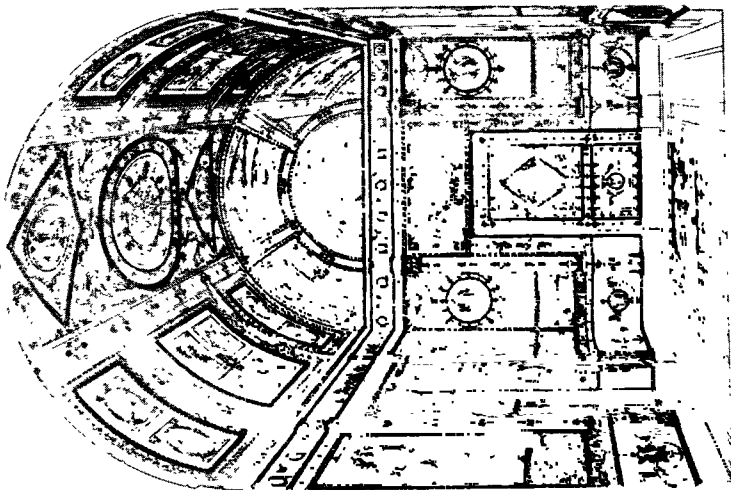
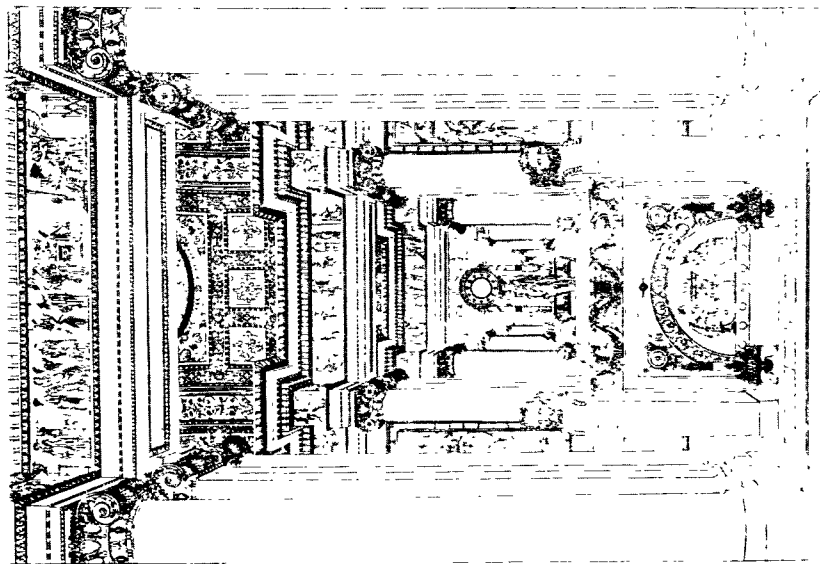
CHIMNEY-PILASTR, BORDEAUX. STYD. LOUIS SEIZE

Elements of decorative panelled dado and walls. Mirror over fireplace. Stylh arabesque decoration in pilaster panels.

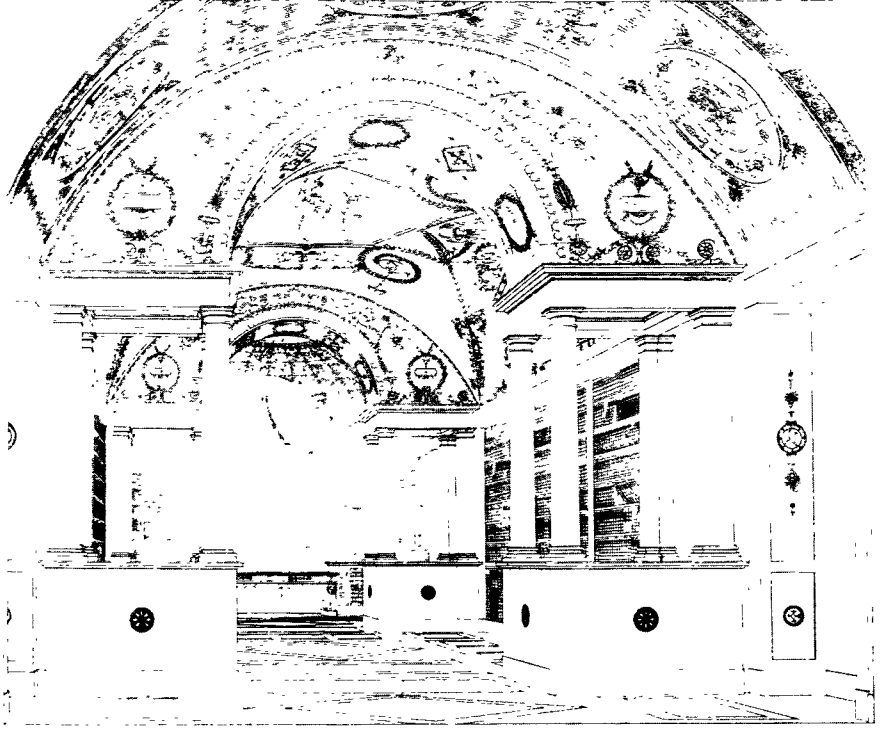


THÉÂTRE: BORDEAUX, GRAND STAIRCASE: INTERNAL TRIUMPH IN MASONRY, ADOPTING EXTERNAL ARCHITECTURAL FEATURES

(J. Louis, *Architect.*)



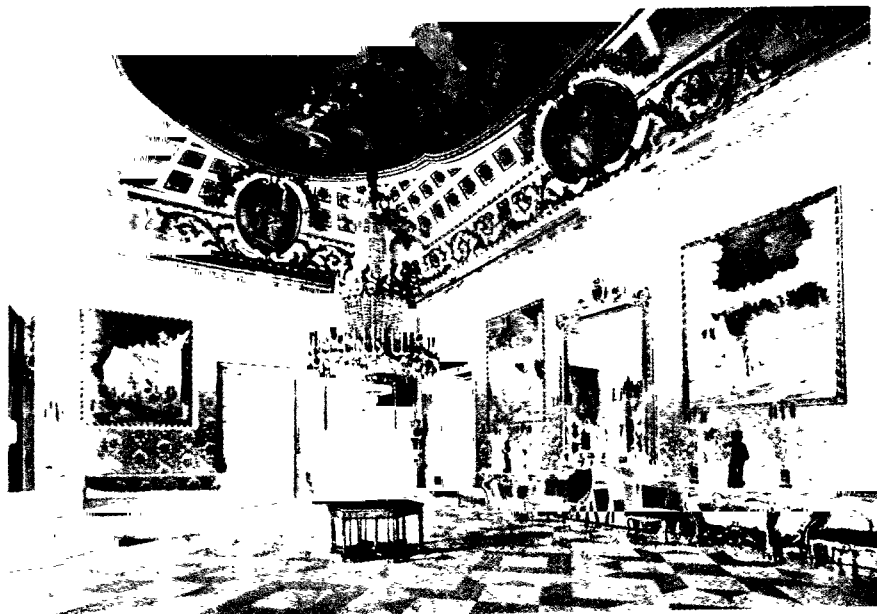
DESIGNS FOR INTERIORS IN THE EMPIRE STYLE
(By Percier and Fontaine, *Architects*)



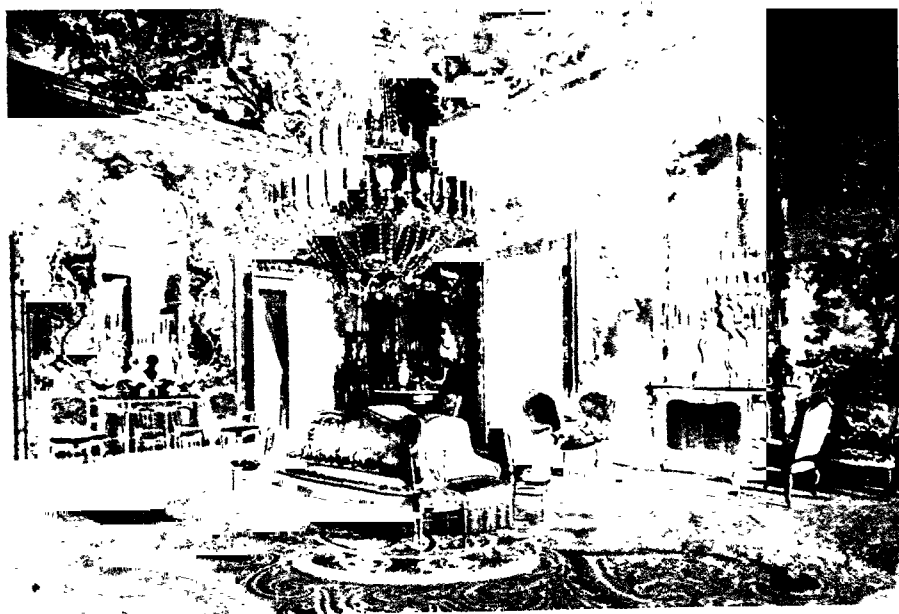
LA MALMAISON, NEAR PARIS. VIEW OF LIBRARY, EMPIRE STYLE
(Percier and Fontaine, Architects)



VILLAGE CHURCH NEAR BIARRITZ. TIMBER STRUCTURE CONFORMING TO VAULTED
DESIGN



ROYAL PALACE, MADRID. DECORATION INSPIRED FROM SEVENTEENTH-CENTURY ITALIAN EXEMPLARS. MAIN INTEREST FOCUSED ON PAINTED CEILING



ROYAL PALACE, MADRID. THE GASPARINI SALOON

Rococo treatment of walls and ceiling. Mirrors and console tables forming rich points in the ensemble

Chapter 13

Decorative Composition in England, 1500–1900

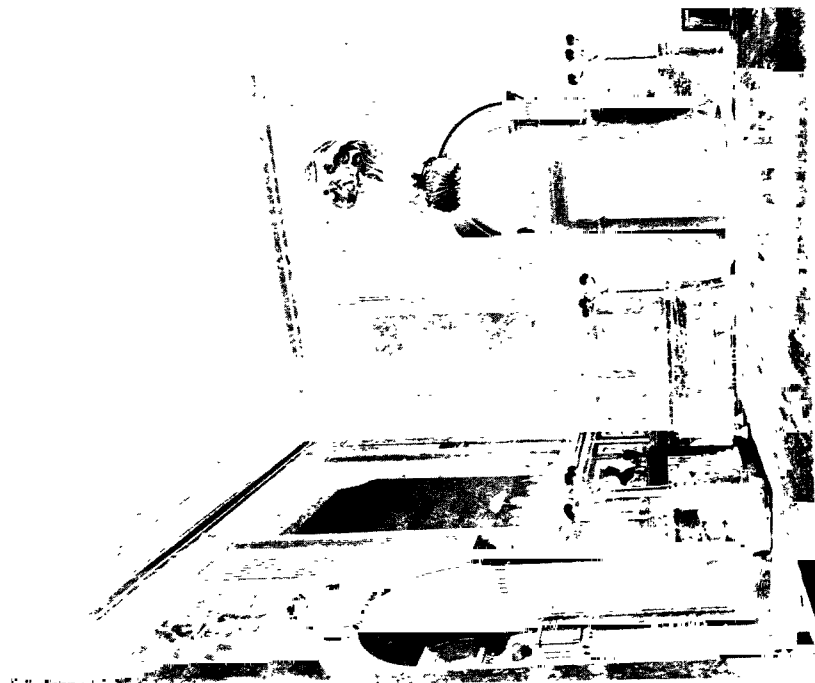


GALLERY, KNOLE PARK, KENT. SEVENTEENTH CENTURY. PLASTER CEILING OF COMPARTMENTAL TYPE. WALLS PANELLED WITH PILASTERS AS PROMINENT ELEMENTS

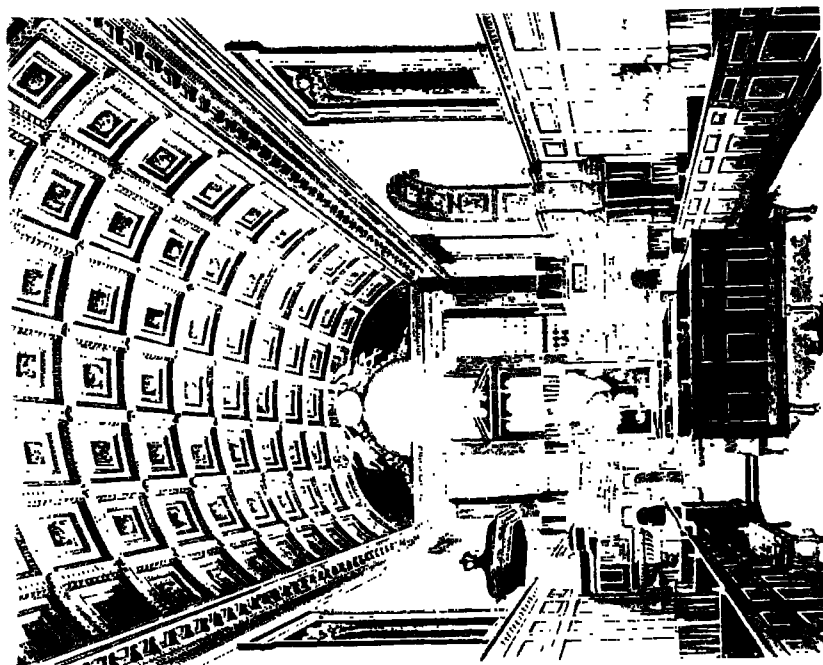


HATFIELD HOUSE, HERTS, A.D. 1612. STAIRCASE DESIGN FEATURING GREAT SCALE NEWELS AND CONSTRUCTIONAL MEMBERS ORNAMENT IN THE FORM OF CARVED ARABESQUES IN RELIEF

(John Thorpe, *Architect*.)



BLenheim PALACE, EARLY EIGHTEENTH CENTURY, PAINTED WALL SURFACTS ADAPTING ARCHITECTURAL FORMS
(See John Vanbrugh, *Architect*)

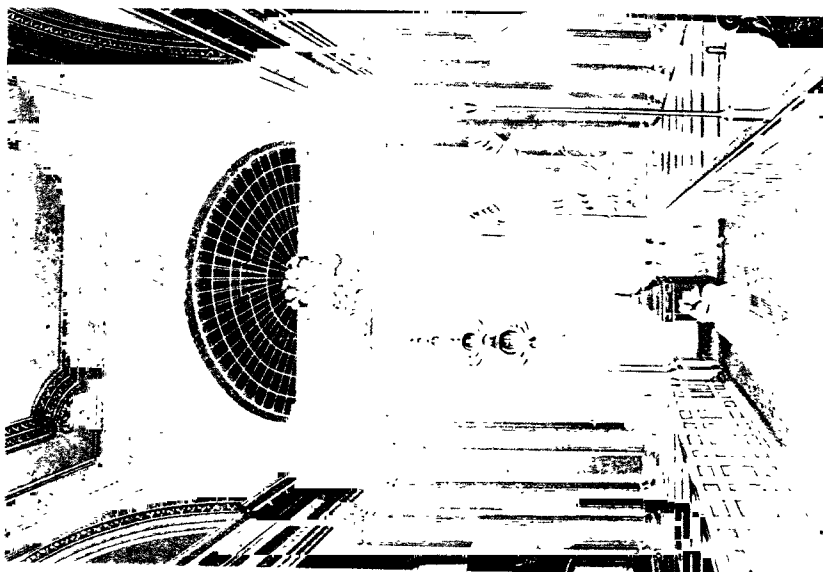


ST. JAMES'S CHAPEL, EARLY EIGHTEENTH CENTURY, TYPICAL CHAPEL INTERIOR AND EVIDENCE OF THE PERIOD

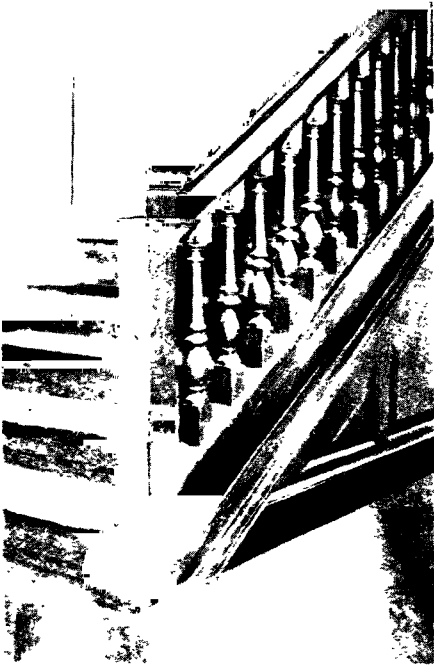
Just window of Palladian-type and coffered segmental ceiling.



CHAPEL, HAMPTON COURT PALACE. SIXTEENTH CENTURY. EARLY RENAISSANCE CITIES RETAINING GOTHIC CHARACTERISTICS
Fittings and retables, late seventeenth century



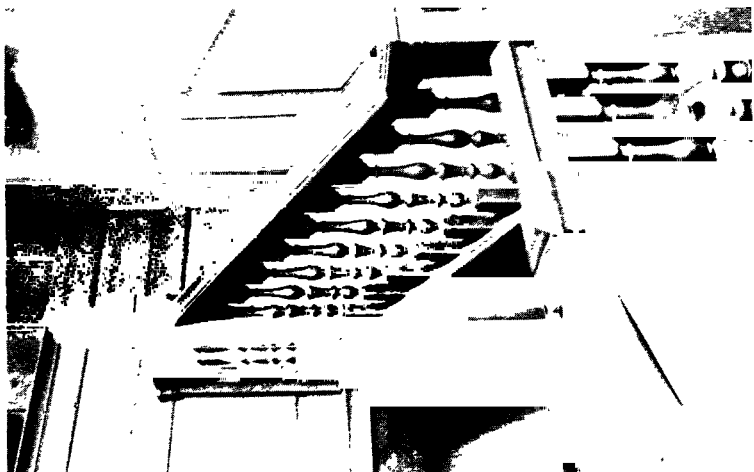
ST. MARY WOOLNOTH, LONDON, A.D. 1713-1719.
MONUMENTAL TREATMENT OF INTERNAL. AITIC CON-
TRIVED FOR CLERESTORY LIGHTING WITH COLUMNS
FORMING THE RESPONDS BELOW THE ARCH
(Nicholas Hawksmoor, *Architecture*)



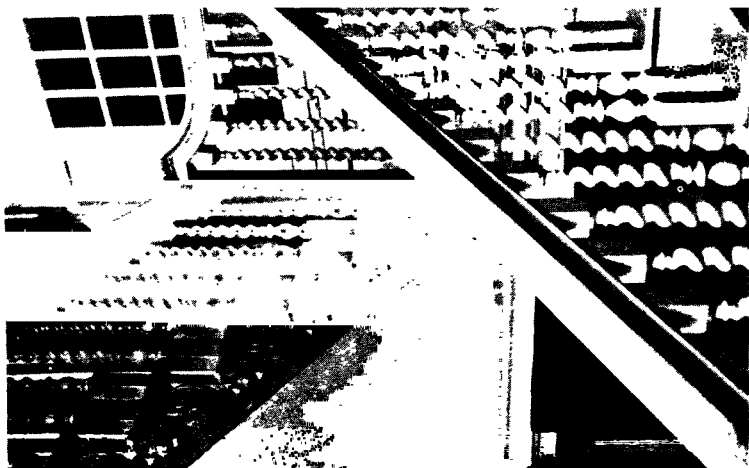
VARIOUS TYPES OF SEVENTEENTH-CENTURY STAIRCASE BALUSTRADES AND NEWELS

32 GROOMS HILL, GREENWICH
ST. THOMAS'S CHURCH, BERMONDSEY

OLD COURT HOUSE, STEPNEY
36 ALBURY STREET, DEPTFORD



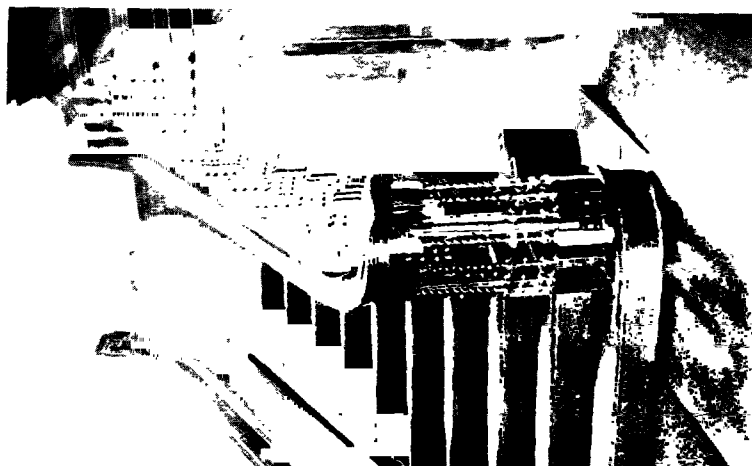
CHURCH OF ST. ALFEGE, GREENWICH
EARLY EIGHTEENTH CENTURY



ST. THOMAS'S HOSPITAL, BERMONDSEY
PERIOD OF QUEEN ANNE



17 VICTORIA PARK SQUARE, BETHNAL
GREEN, EARLY SEVENTEENTH CENTURY



37 STEPHEN GREEN, STEPHEN, EARLY
EIGHTEENTH CENTURY, A.D. 1723

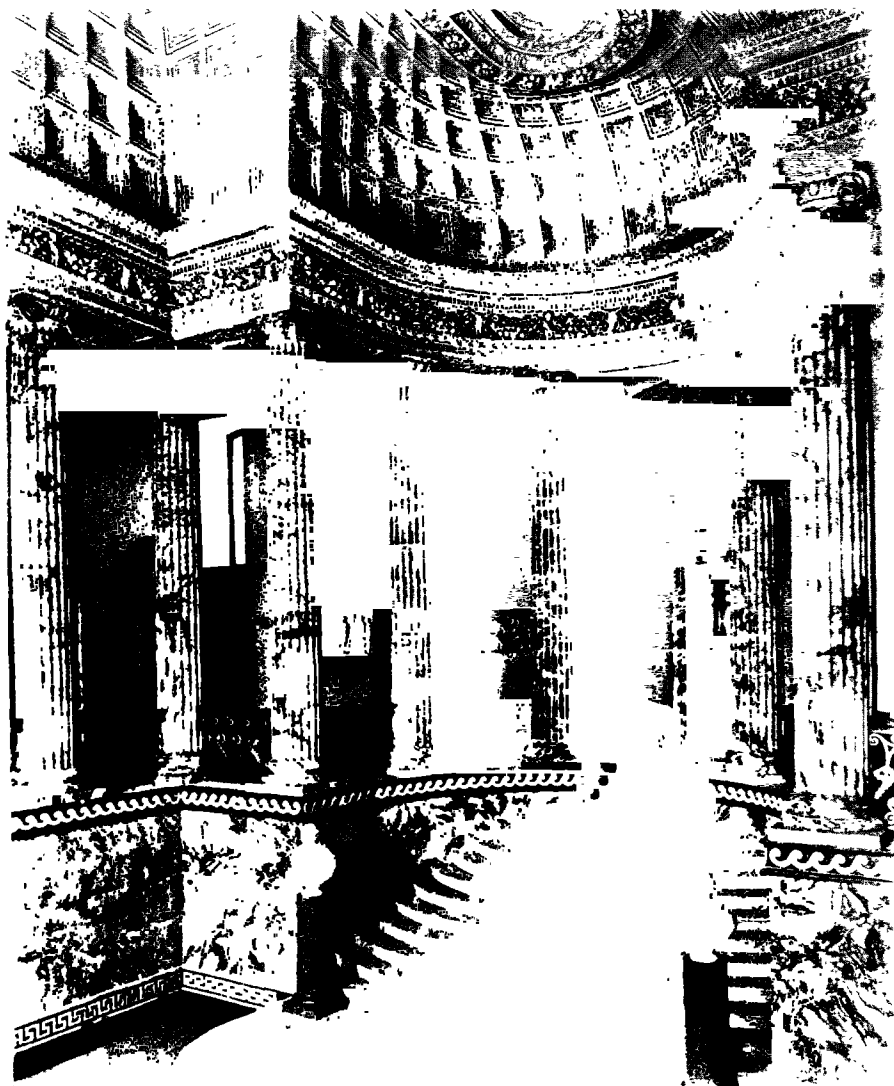


MANOR HOUSE, GREENWICH, EARLY
EIGHTEENTH CENTURY, A.D. 1725

Baluster forms recording adaptation of Classical order.

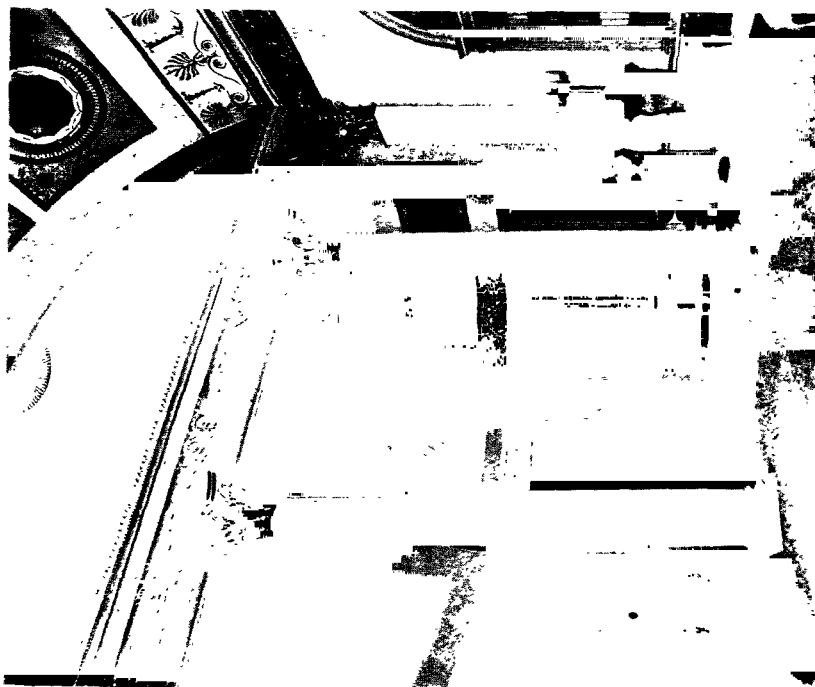


34 ALBURY ST., DULFORD, EARLY SEVEN
TEENTH CENTURY



HOLKHAM HALL, NORFOLK. FIRST HALF OF THE EIGHTEENTH CENTURY

Circular end to great apartment in form of a niche contains stairway and landings. (Designed by William Kent. Carried out by Matthew Brettingham, *Architect*.)



KENWOOD, HIGHGATE, LAST QUARTER OF EIGHTEENTH CENTURY.
DETAIL OF SCREEN IN LIBRARY
Columns introduced to create internal perspective effects. (Robert
Adam, *invented*)



HOUGHTON HALL, NORFOLK, A.D. 1723.
Theme of galleried hall inspired by the interior of the Banqueting Hall
by Inigo Jones. (Colin Campbell, *invented*)



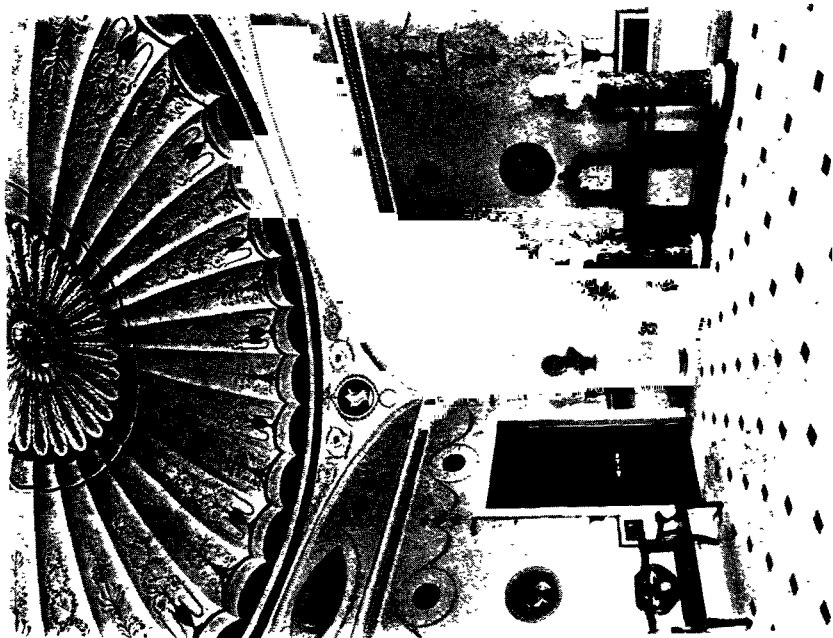
ST. STEPHEN'S GREEN, DUBLIN. PAINTED DOORS IN DRAWING-ROOM. PERIOD LAST QUARTER OF EIGHTEENTH CENTURY

Richly decorated door panels contrasted with slight enrichments to architrave and chair rail.

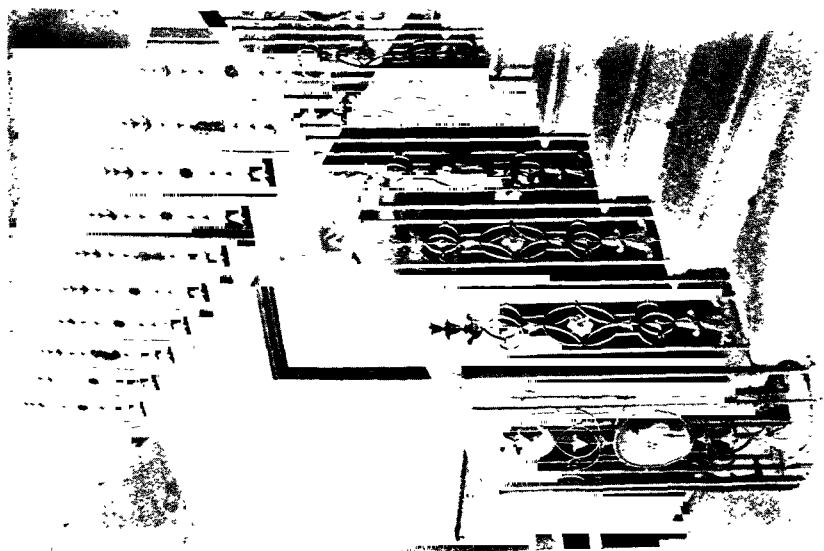


MUSIC-ROOM, ST. STEPHEN'S GREEN, DUBLIN. LAST QUARTER OF EIGHTEENTH CENTURY

Main treatment of wall surfaces consists of panels recessed in the thickness of the plaster. Classical painted subject for central panel and trophies of musical instruments for side panels. Fireplace interior about 1805.

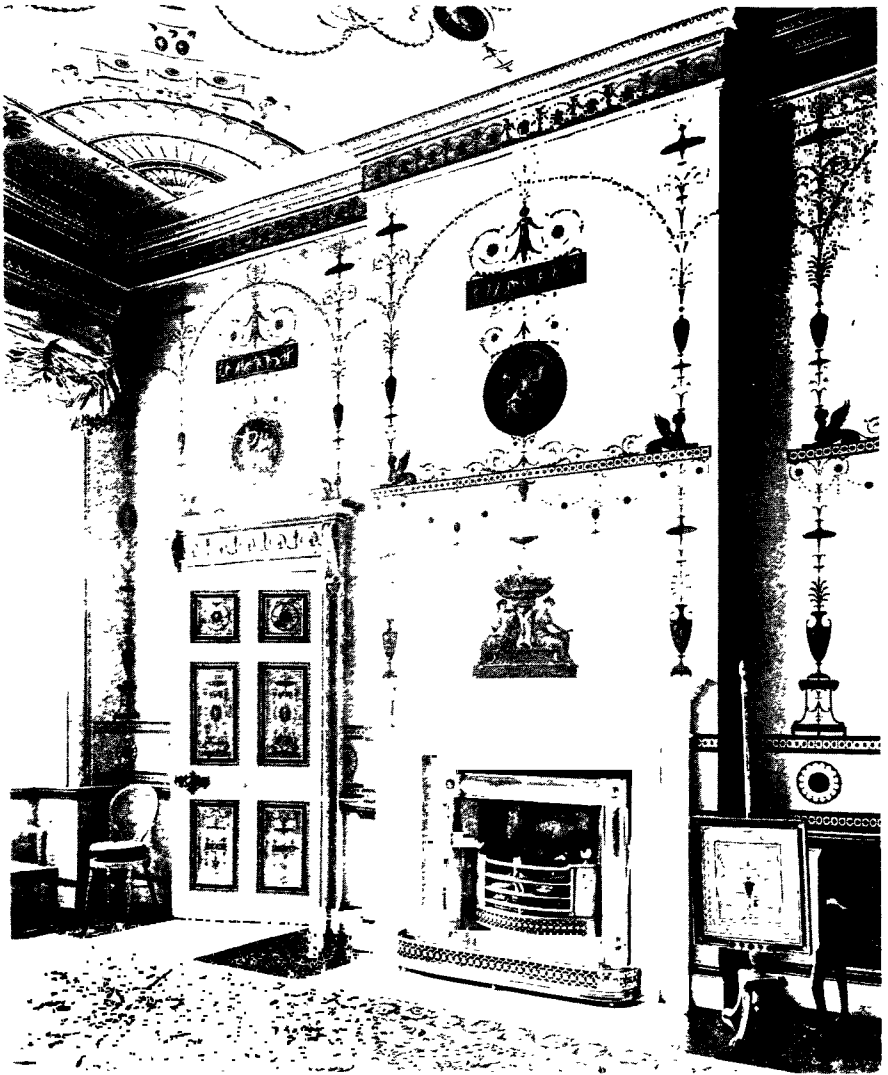


WOODHALL PARK, HERTS. ABOUT 1770. DELICATE DECORATIVE MOTIFS REPEATED ON PLAIN SURFACE. UMBRELLA CEILING FORMS CROWN



HAVERINGHAM HALL, SUFFOLK. ABOUT 1760. A STONE STAIRCASE WITH WROUGHT-IRON BALUSTRADE AND MAHOGANY HANDRAIL

The repetition of the intricate panel gives great richness.
(Sir Robert Taylor, *Architect*)



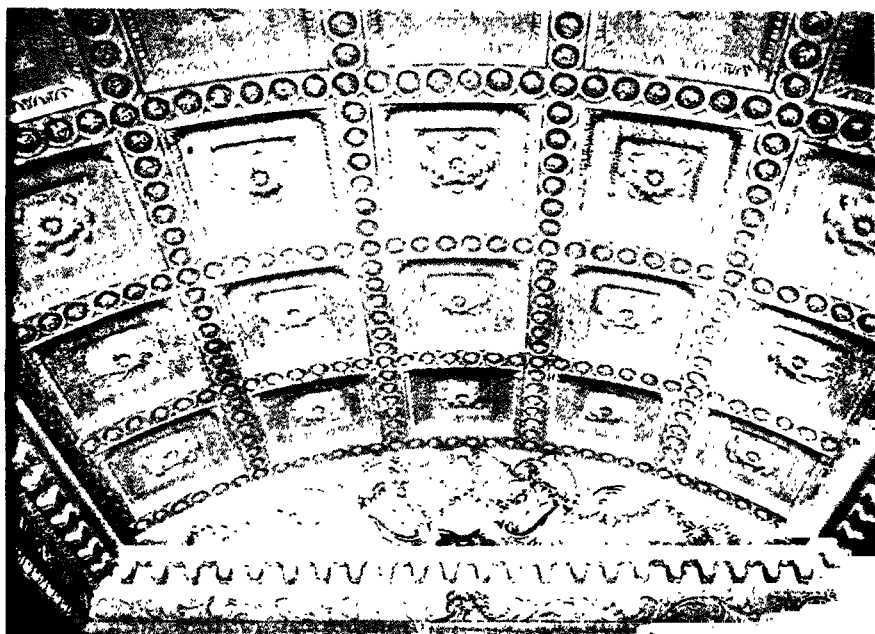
OSTERLEY PARK, MIDDLESEX. LATE EIGHTEENTH CENTURY. THE ADAM STYLE AT ITS ZENITH

The plastered walls are tinted to form a plain background to receive a painted decoration derived from Pompeian and Roman examples. (Robert Adam, *Architect*.)

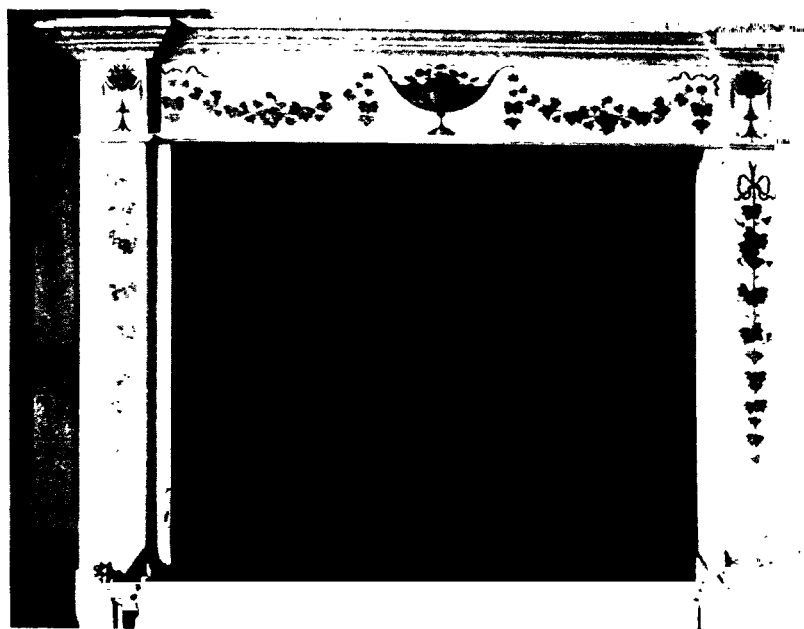


THE GREAT LIBRARY, KENWOOD HOUSE, HIGHGATE, MIDDLESEX. LATE EIGHTEENTH CENTURY

A skilful adaptation of a Roman Classical theme. The Corinthian columns not only screen the ends of this apartment, but serve the purpose of increasing its apparent size by introducing additional interest.

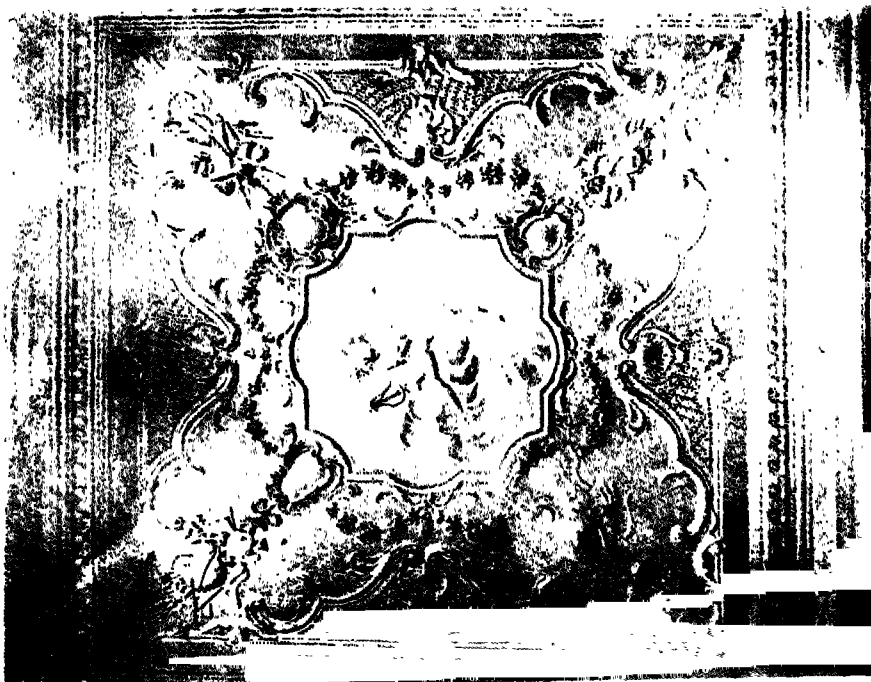


RUSSBOROUGH, EIRE, CEILING IN MUSIC-ROOM, A.D. 1750. SEGMENTED COFFERED CEILING WITH MOSAICS IN THE COFFERS AND CARTOUCHE ENRICHMENT IN THE TYMPANUM



RUSSBOROUGH, EIRE, MANTEL IN DINING-ROOM. AN EXAMPLE OF INLAID BOSS DEcoration

A form of design favoured in Ireland during the last quarter of the eighteenth century.



ST. STEPHEN'S GREEN, DUBLIN, CEILING IN BACK DRAWING-ROOM. MIDDLE OF EIGHTEENTH CENTURY. SYMMETRICAL TREATMENT OF STUCCOED CEILING
Scrolled cartouche forms repeated on the four angles about central panel in relief.

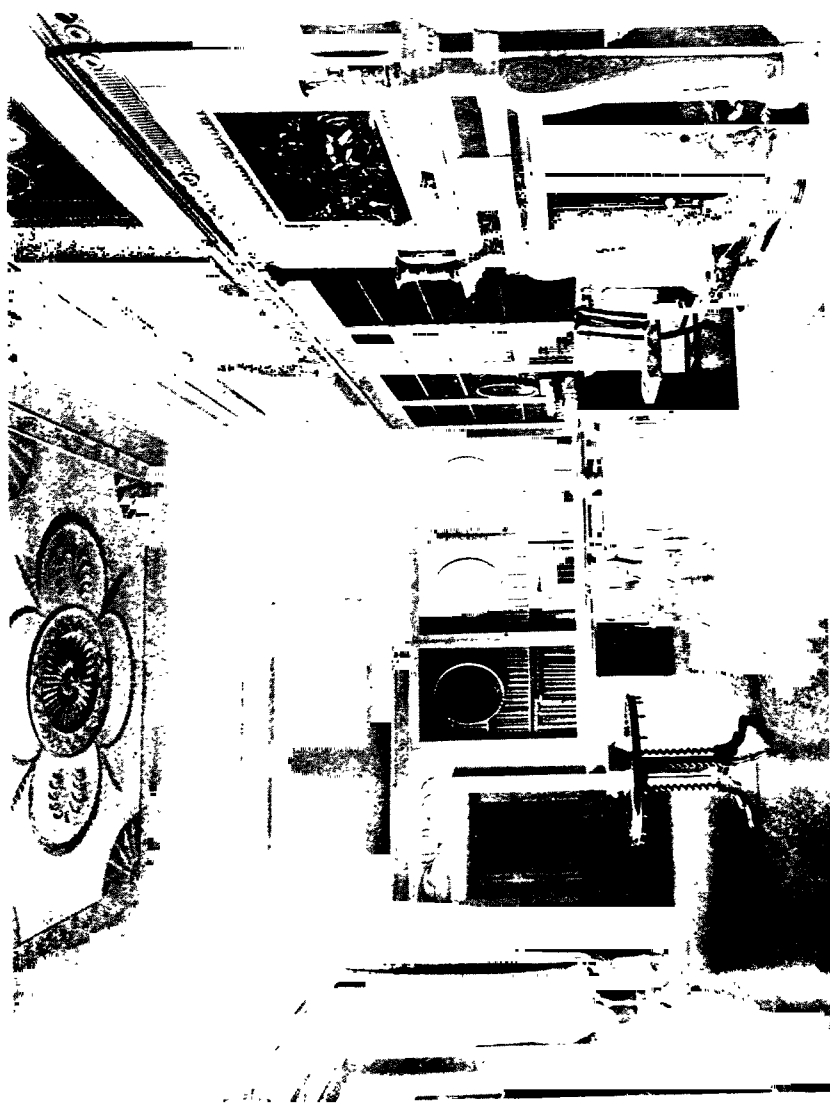


ST. STEPHEN'S GREEN, DUBLIN, INNER HALL. LATE EIGHTEENTH CENTURY.
INGENIOUS DESIGN OF VAULTED CEILING WHICH SUPPORTS RETURN FLIGHT OF STAIRCASE
Ornaments subordinate to panels and ribs.



HAREWOOD HOUSE, YORKS. CONSISTENT ARCHITECTURAL TREATMENT OF HALL.

A free interpretation of the Roman Doric Order and entablature admits of simple beam framing for ceiling. Circular panels fill interspaces. (Robert Adam, *Architect*.)

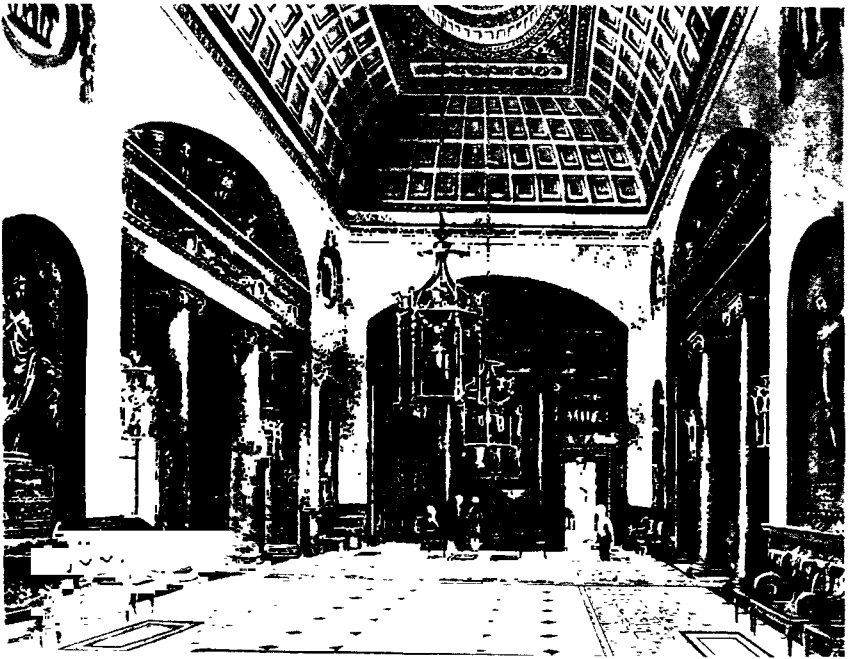


THE LIBRARY, SHARDELOES, BUCKINGHAMSHIRE: THIRD QUARTER OF EIGHTEENTH CENTURY. AN INTERESTING TREATMENT OF BOOKCASES PARTLY RECESSED WITHIN THE WALLS. The cornice above the books forms the horizontal link-binding windows, fireplace and doors. Panels enriched with trophies and medallions. (Robert Adam, *Antiquities*)



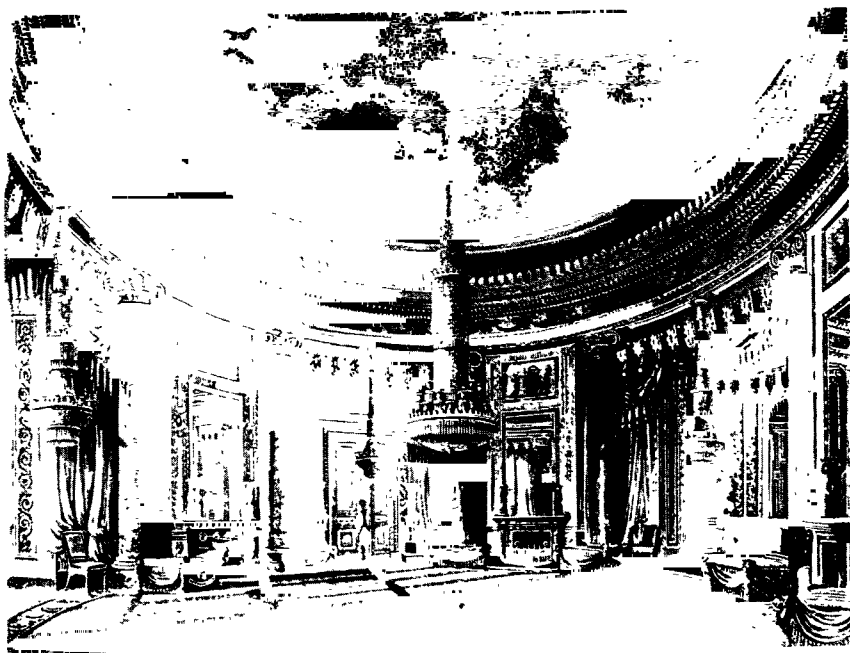
QUEEN'S LIBRARY, ST. JAMES'S PALACE. RECTANGULAR APARTMENT WITH ARCADED TREATMENT TO WALLS, SINGLE-COVED CEILING WITH CENTRAL PANEL

The introduction of the busts on consoles provides a subsidiary link. Style of Kent, A.D. 1735.



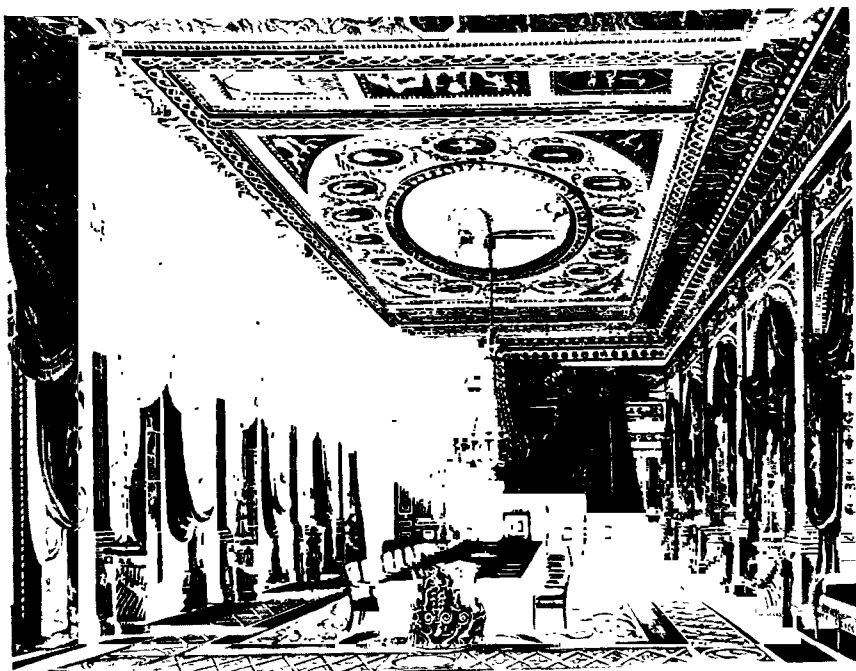
CARLTON HOUSE, ENTRANCE HALL, A.D. 1784. RECTANGULAR ENTRANCE HALL WITH OPEN SCREENS OF IONIC COLUMNS

The cove is coffered and framed to contain a circular lantern. Arched forms sympathetic to coved ceiling. (Henry Holland, *Architect*.)



CIRCULAR ROOM, CARLTON HOUSE, 1784-1806. THE STYLE PRECEDING THE REGENCY MANNER

Simple painted ceiling contrasted with columnar treatment of walls. Plain coloured carpet repeating simplicity of ceiling. (Henry Holland, *Architect*.)



THRONE ROOM, CARLTON HOUSE, 1784. TREATMENT RECALLING CONTEMPORARY FRENCH DESIGNS

Circular-headed windows balanced by similar design on opposite wall. Cameo paintings in ceiling panels. Richly charged detail in cornice. Geometrical patterns for carpet. (Henry Holland, *Architect*.)



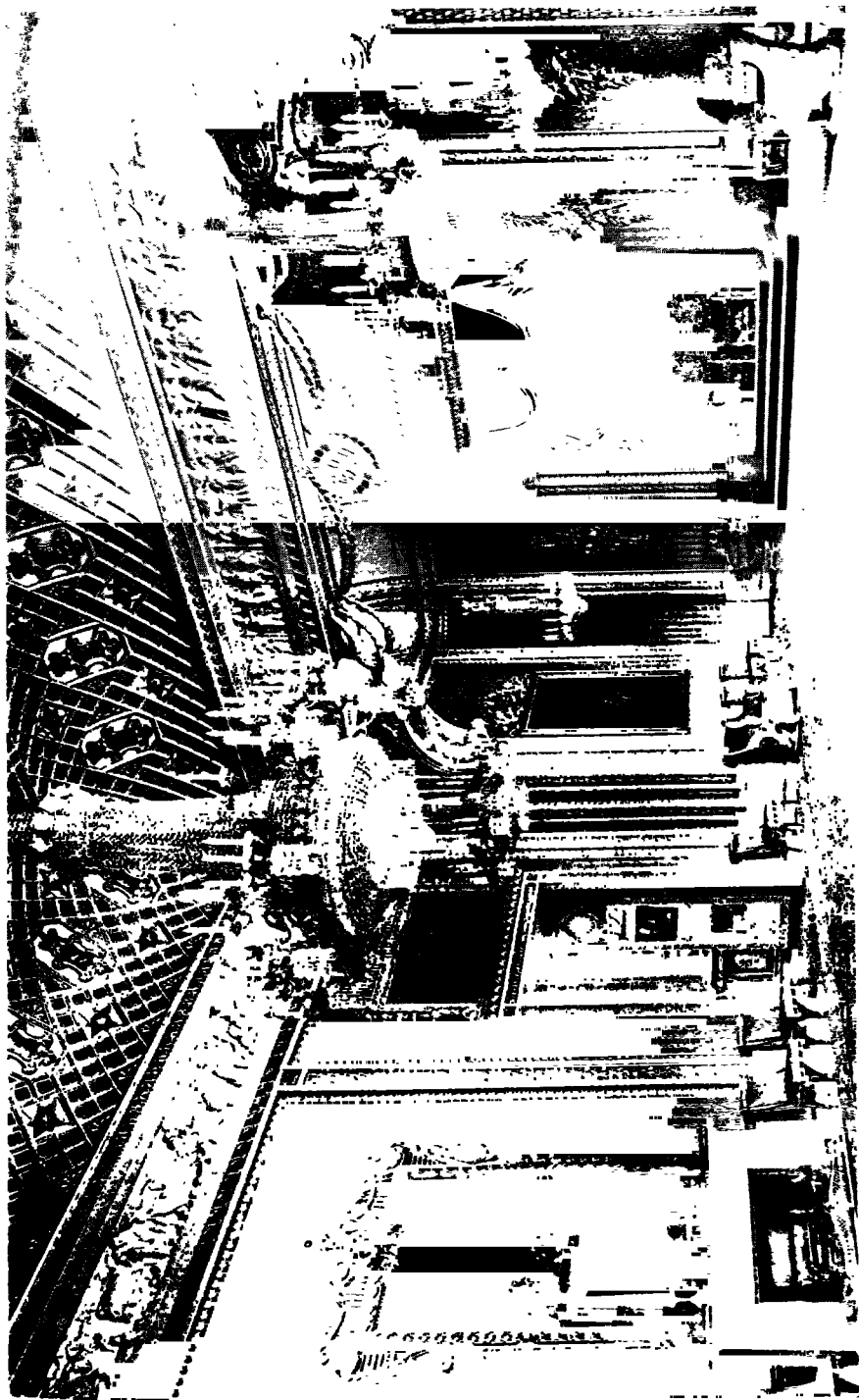
CHAMBER LEADING TO THRONE ROOM, CARLTON HOUSE, A.D. 1784. THE STYLE OF DECORATION PRECEDING THE REGENCY MANNER

General scheme of decoration based on Louis Seize style. Wall panels schemed for portraits. Drapery at end of room creates background for focal point. Flat ceiling enriched by panels of various form. (Henry Holland, *Architect*.)



ANTE-ROOM, CARLTON HOUSE, A.D. 1784. RETICENT INTERIOR IN WHICH THE WALLS AND CARVED CEILING ARE LINKED BY SIMILAR ORNAMENTATION

The casement windows, mirror and console table create the main interest. Doors maple colour with painted decoration in panels. (Henry Holland, *Architect*.)



THE THRONE ROOM, BUCKINGHAM PALACE. A VICTORIAN VERSION OF THE REGENCY STYLE
(James Pennethorne, *Architect*, 1850.)

Chapter 14

Renaissance Decoration in Northern Europe

*The Netherlands, Germany, Austria, Denmark, Sweden,
Russia*



KRIEGSTUBE, LÜBECK RATHAUS. SIXTEENTH CENTURY

Walls paneled to height of middle cornice of stone chimney-piece. Space over finished with stamped leather. Coffered ceiling of wood.



BAROKMUSEUM, MARMORSAAL, VIENNA. DECORATIVE TREATMENT UNIFIED BY CURVAICURAL FEATURES AND SALIENT WALL.



OBFIGES BL-VEDERESCHLOSS, VIENNA. CONTRAST OF HEAVY BAROQUE SCULPTURE AND DELICATE SURFACE DECORATION.



NATIONAL LIBRARY, VIENNA. PART OF FORMER IMPERIAL PALACE.

Sinuous curvatures of elements contrasting with regular formation of plan.

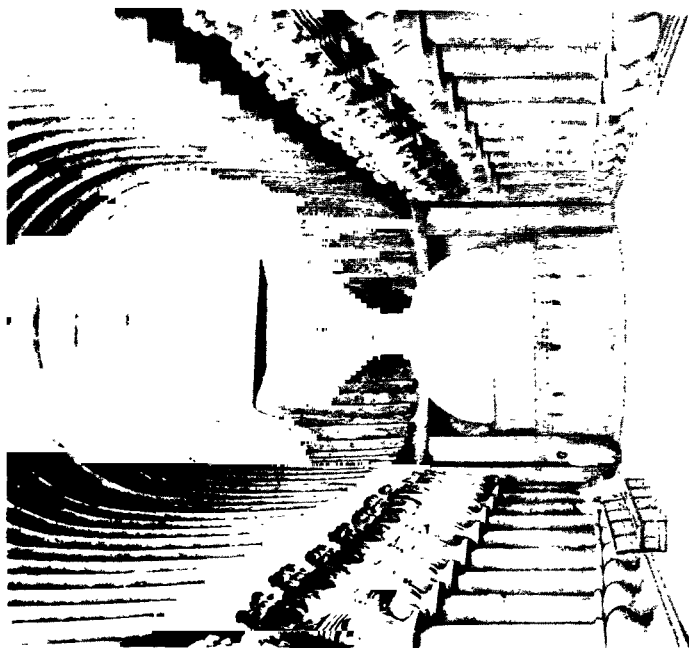


FINANCE MINISTRY, VIENNA

Baroque sculptural supports and free curvatures in minor parts.

Chapter 15

The Exotic Styles



KARLI, BUDDHIST CAVE IN WESTERN GHATS

Effect produced by repetition of similar features, enriched by carving forming frieze.

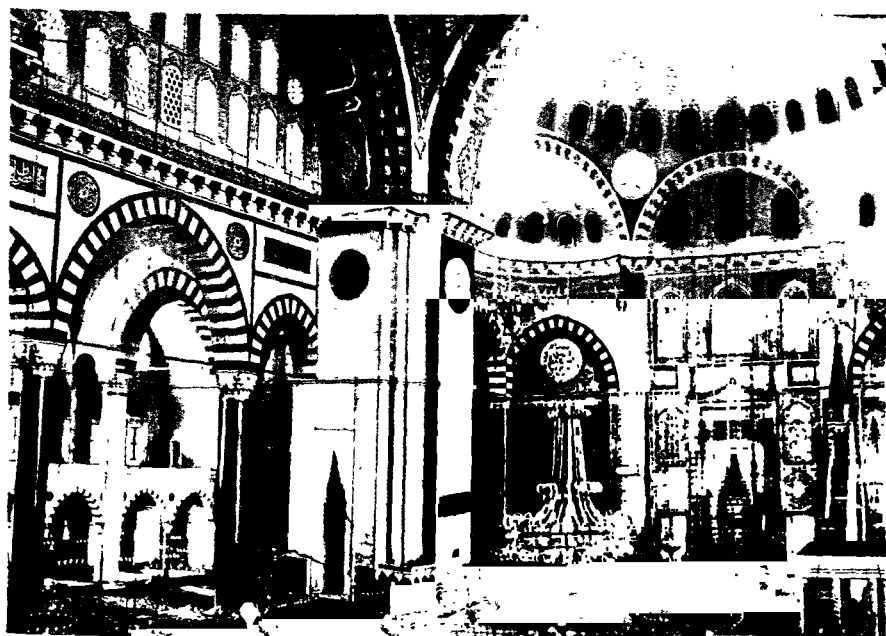


VISHNAKARMA'S CAVE

Repetition of rock-cut supports contrasted with horizontal band of sculpture.



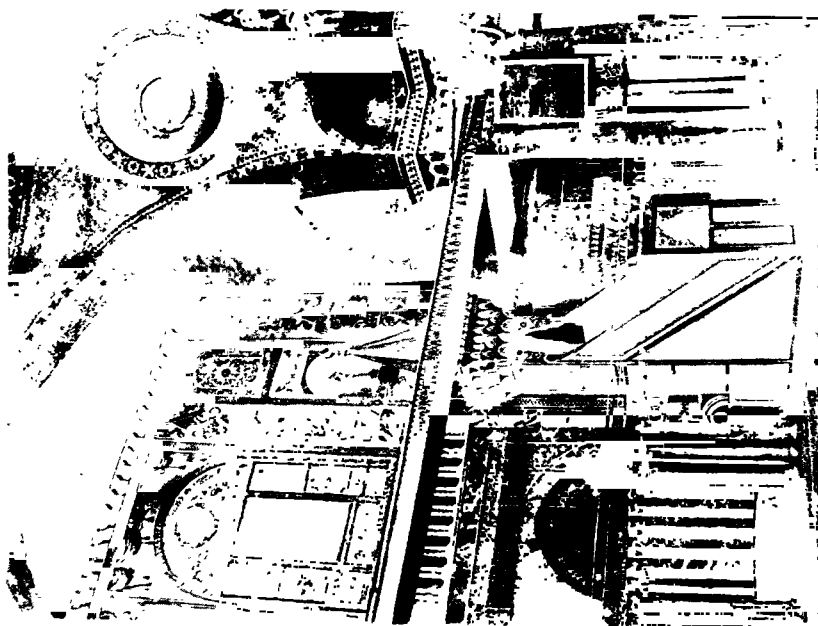
MIHRAB AND MINBAR. WITH WALL SURFACES PANELLED AND DECORATED



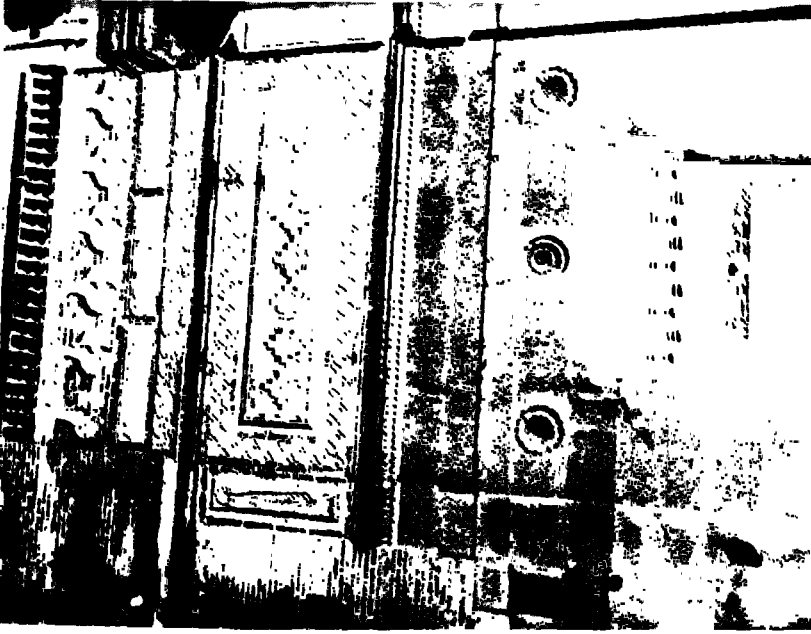
MOSQUE OF SULEIMAN, ISTANBUL. DECORATION OF DOMED INTERIORS
Note the accentuation of main structural lines, in supports and arches.



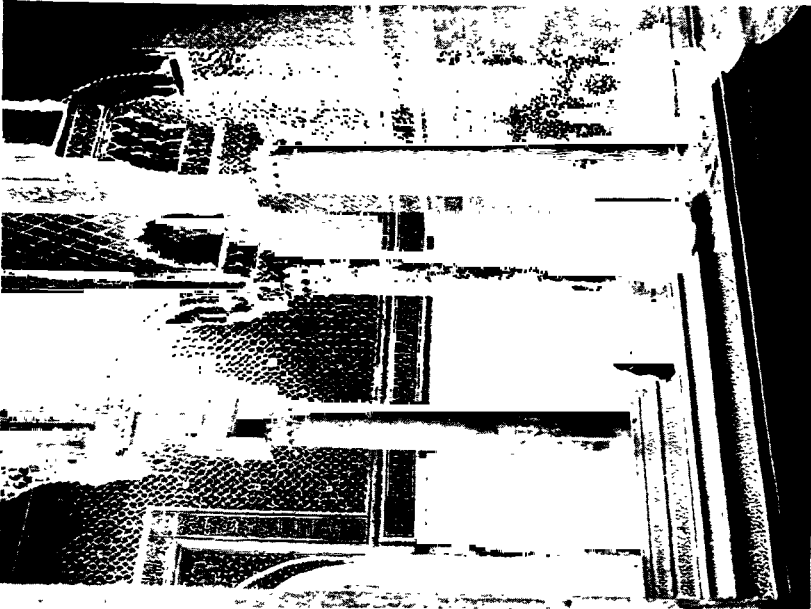
MOSQUE OF SOKALA MEHMET PASHA ISTANBUL.
MIHRAB (NICHE) AND MINBAR (PULPIT) IN JONAPPOSITION, DECOR-
ATION IN TILING.



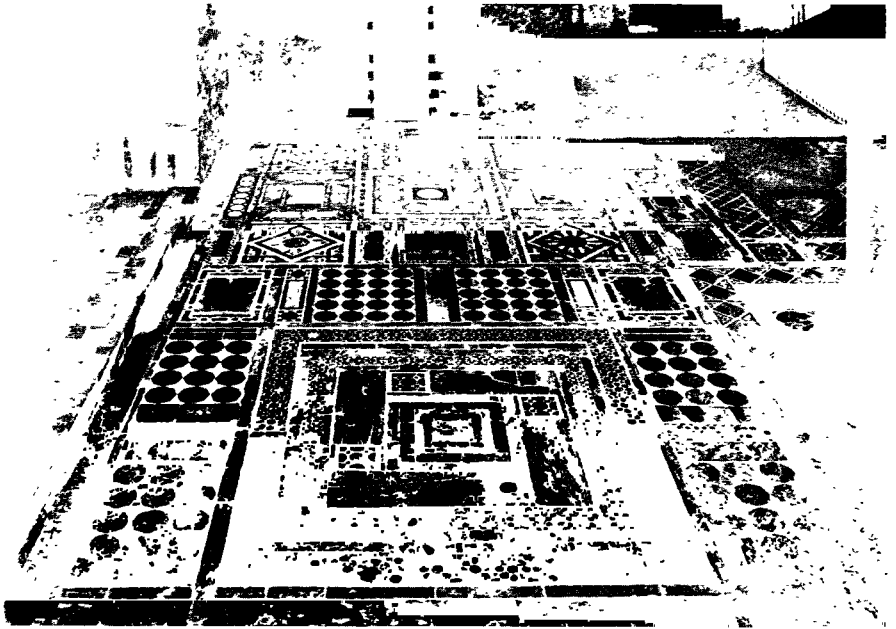
CAIRO MUSEUM
ARCUATED AND RECTILINEAR FORMS UNIFIED BY PATTERNS AND
COLOURS PRODUCING GENERAL ENSEMBLE.



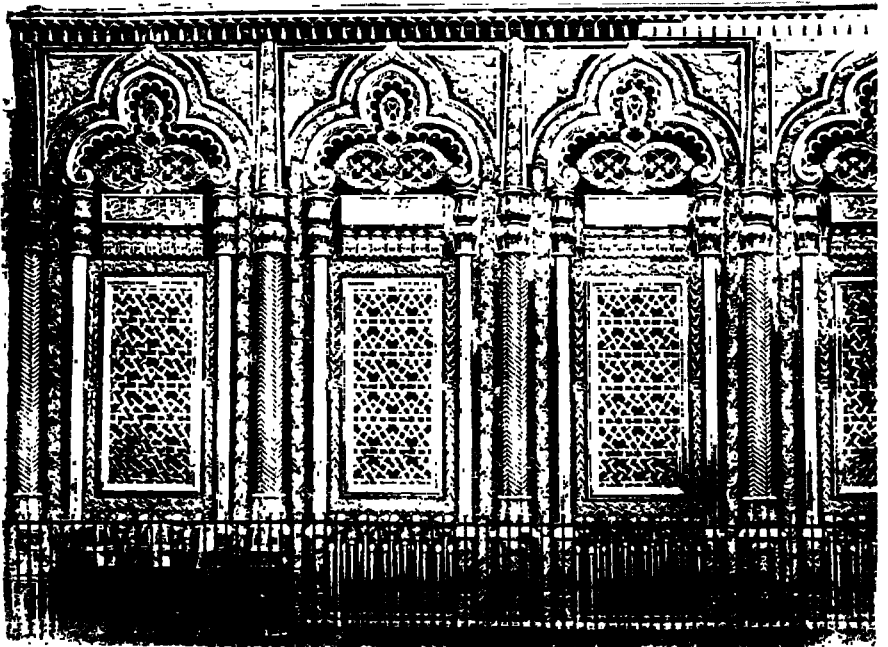
PASHAN. CORNICE AT ENRICHMENT FRAMED IN PASHAN.



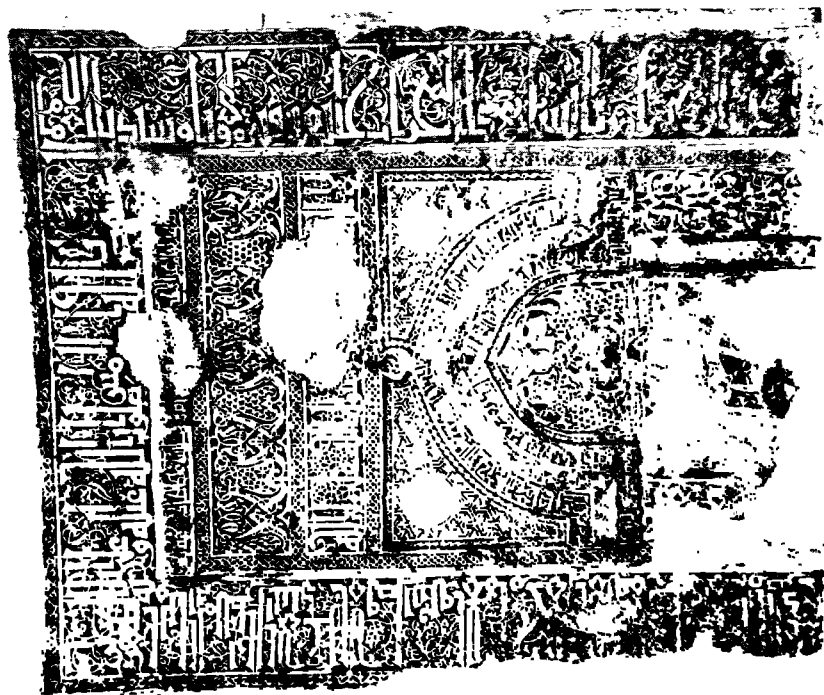
MARRAKESH. CENTRAL HALL OF MAUSOLEUM.
COLUMNAR TRIUMPHANT DERIVED FROM CLASSICAL SOURCE,
DIAPHRAGM WALL'S FORMING UNIFORM TEXTURE.



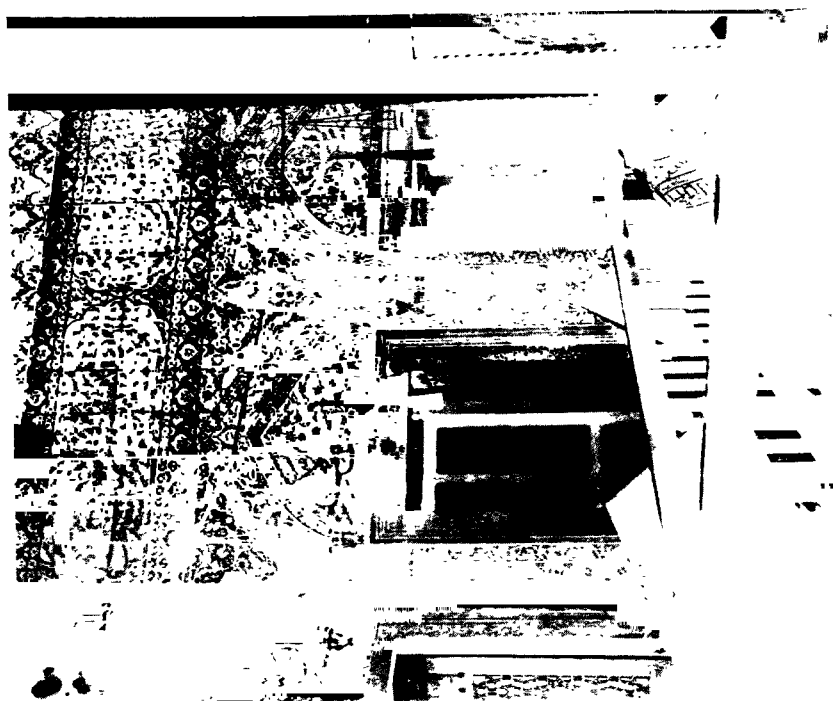
MOSQUE OF SULTAN HASSAN. GEOMETRICAL PATTERNS IN COMPARTMENTS



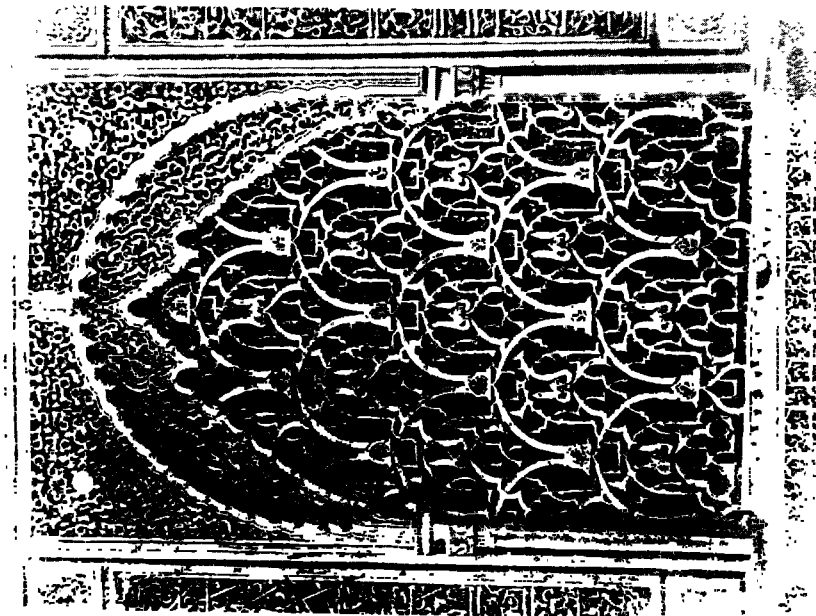
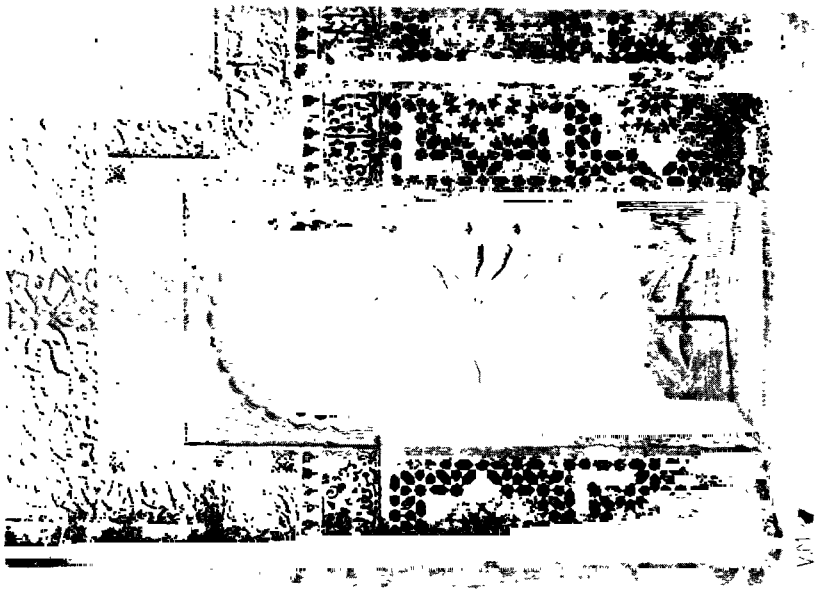
MOSQUE OF SULTAN MOHAMMAD ALI. WALL ARCADING WITH TREFOILED CUSPED HEADS



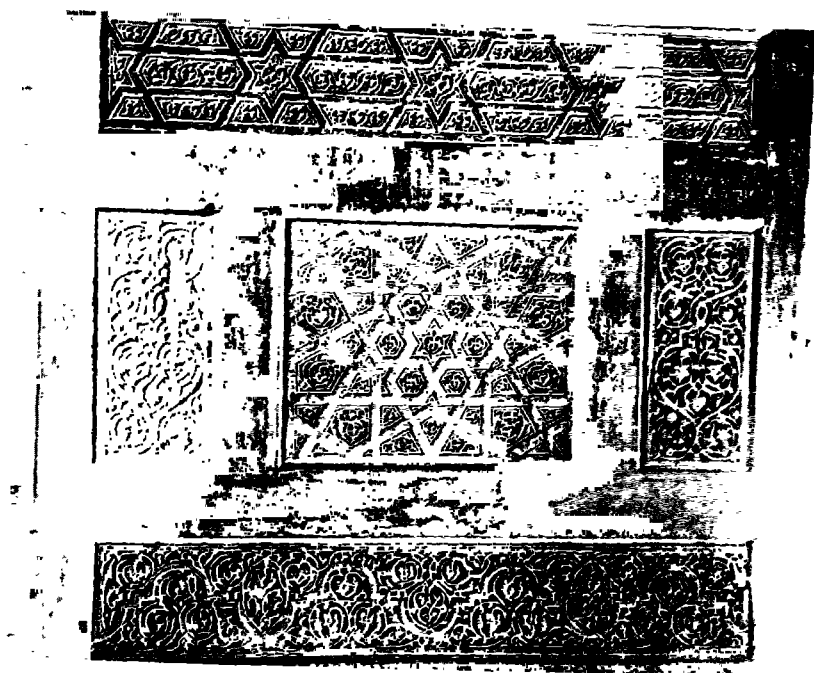
MOSQUE OF TULUN. STRIP DECORATION WITH CUPIC INSCRIPTIONS FORMING GENERAL PATTERN



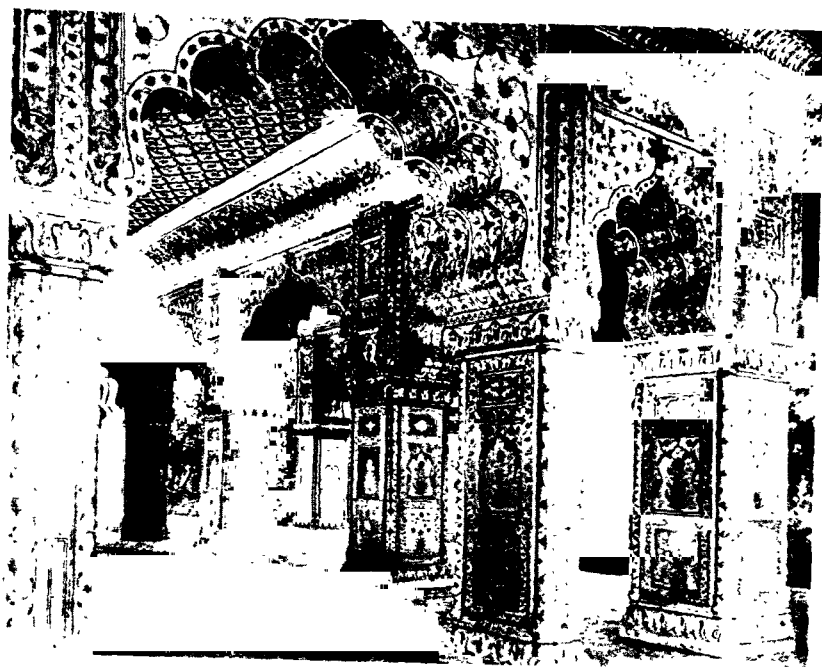
TOMB OF ROXALANE SULEIMAN. TILED WALL DECORATION IN IMITATION OF FABRIC. THE ARCHES ARE REMINISCENT OF STRUCTURAL FORMS



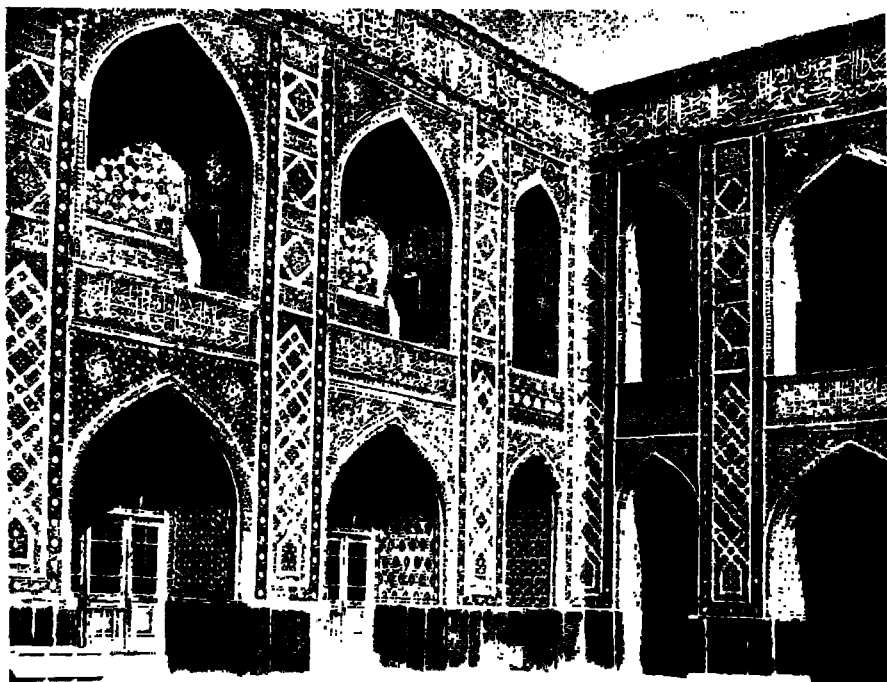
ISLAMIC DECORATIVE MOTIFS
GEOMETRIC PATTERNS FILLING ENCLOSED SPACES DRAWN BY RECTILINEAR PATTERNS, EXPLOITED FOR EXPRESSING DOOR AND WINDOW TREATMENTS



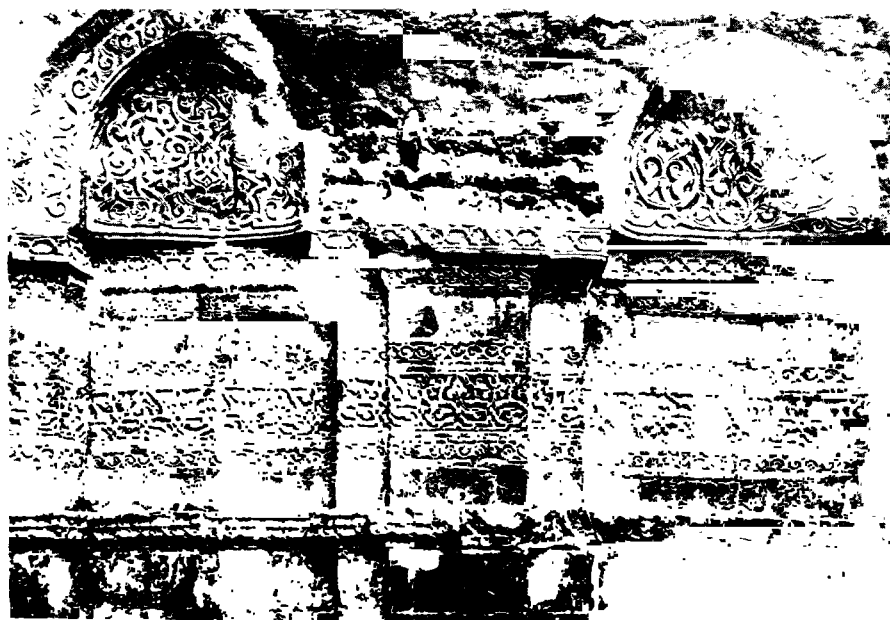
MOSQUE OF OMAR, JERUSALEM, INTERIOR. REPEAT PATTERNS OF VARYING ARABESQUES IN PANELS



INTERIOR OF FORT, DELHI. TYPICAL INLAID TREATMENT WHERE THE FLORAL THEME PREDOMINATES



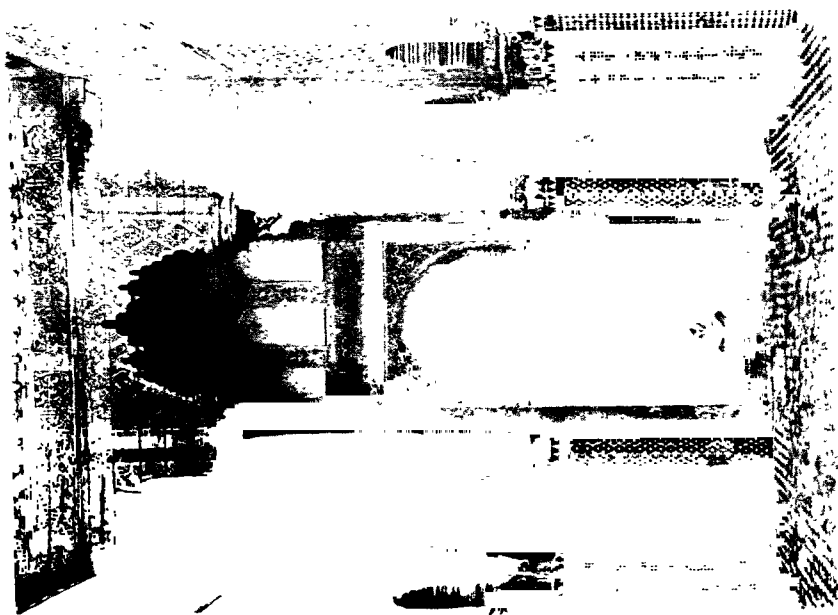
MOSQUE OF GOHAR SHAD. STRUCTURAL TREATMENT OF INTERNAL COURT ENRICHED WITH INLAYS OF TILES



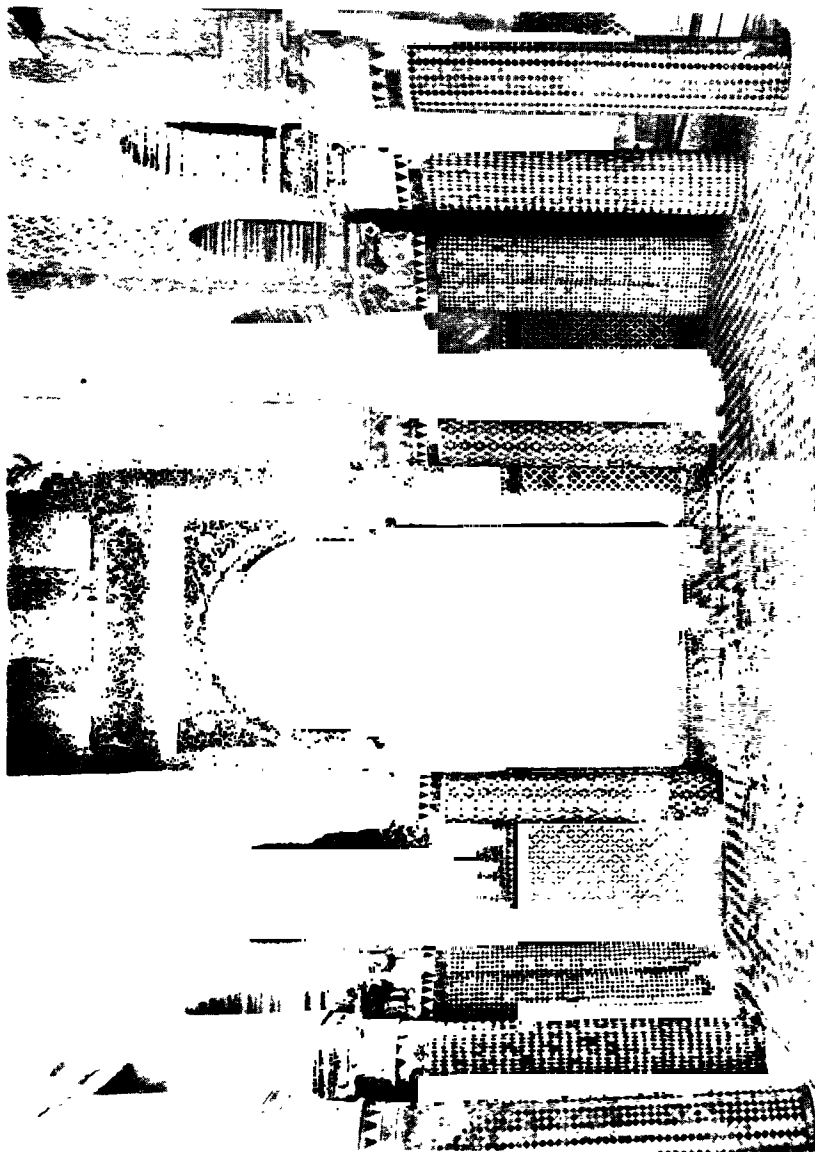
MOSQUE OF EL HAKIM. VARIATION OF CARVED ORNAMENTATION ENRICHING NICHEs AND GENERAL WALL SURFACE



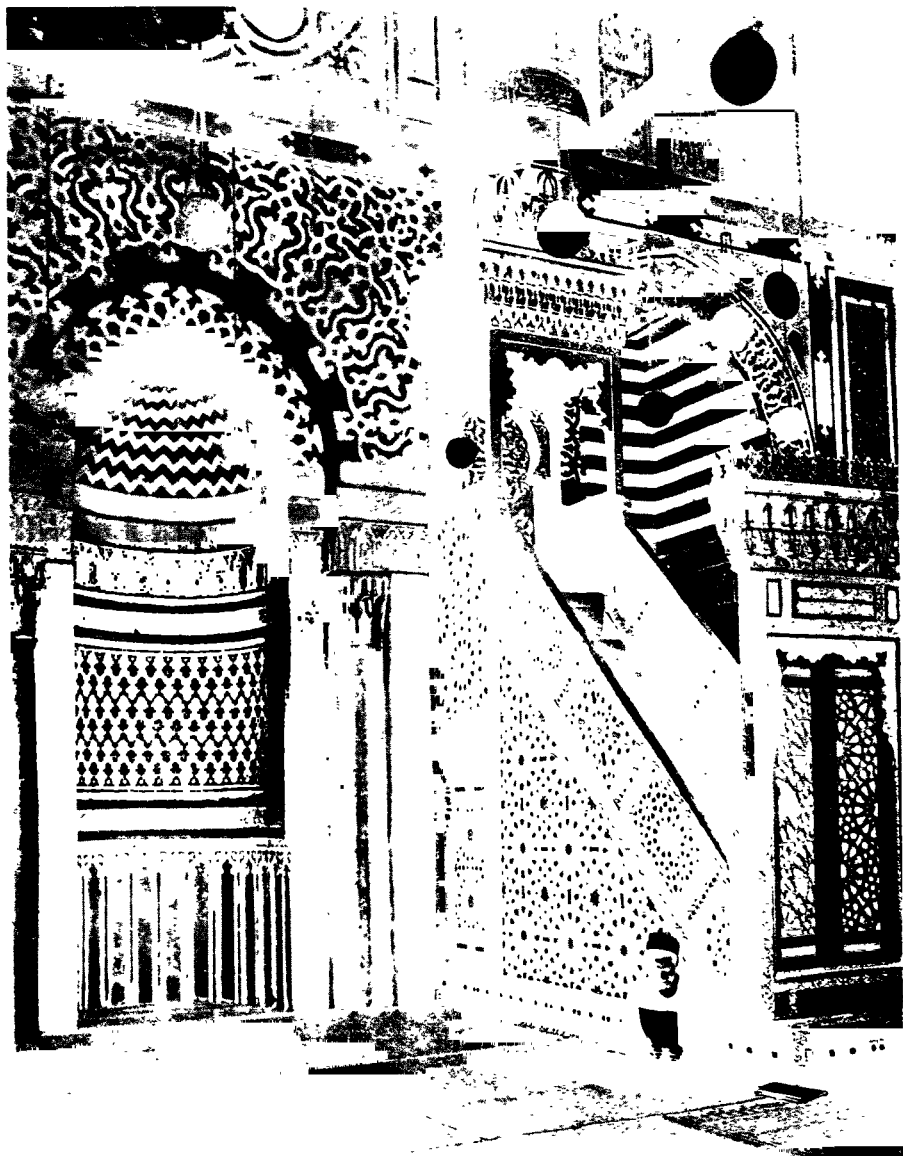
INTERIOR OF THE MEDERSA, SALI
ARCHITECTURAL DETAIL, SUBORDINATE TO INTRICATE PATTERNING.



INTERIOR OF THE MEDERSA, SALI
POLYCHROMATIC IRRIDESCENT OF WALL SURFACE AND COLUMNS.



POLYCHROMATIC DECORATION. COMPRISING LOWER PART OF INTERIOR AND FLOOR CONTRASTED WITH LARGE PLAIN SURFACES ABOVE EYE-LEVEL

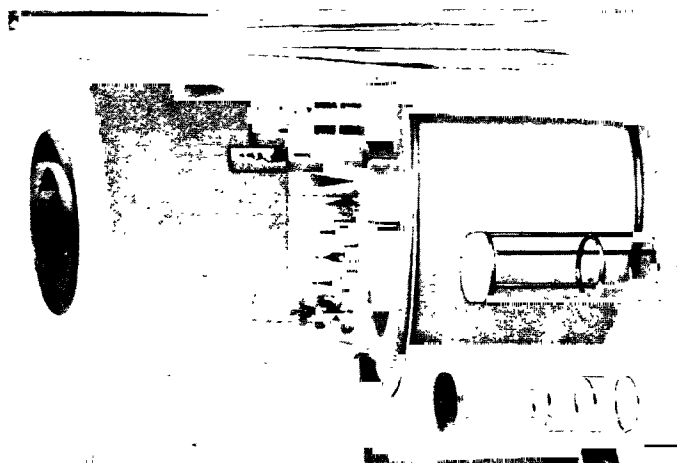


MOSQUE OF EL MONAYYAD, CAIRO. RICH GEOMETRICAL PATTERNING APPLIED ON WALL SURFACES AND FURNITURE ALIKE.

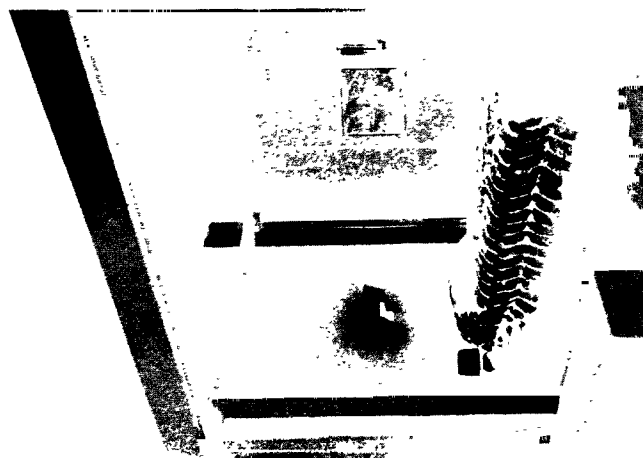
The crowning of the Minbar repeats an external feature in the traditional dome.

Chapter 16

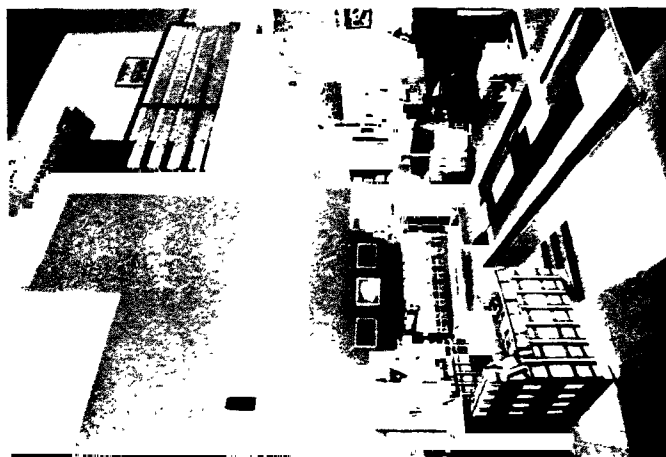
Contemporary Decoration



BAR



BEDROOM

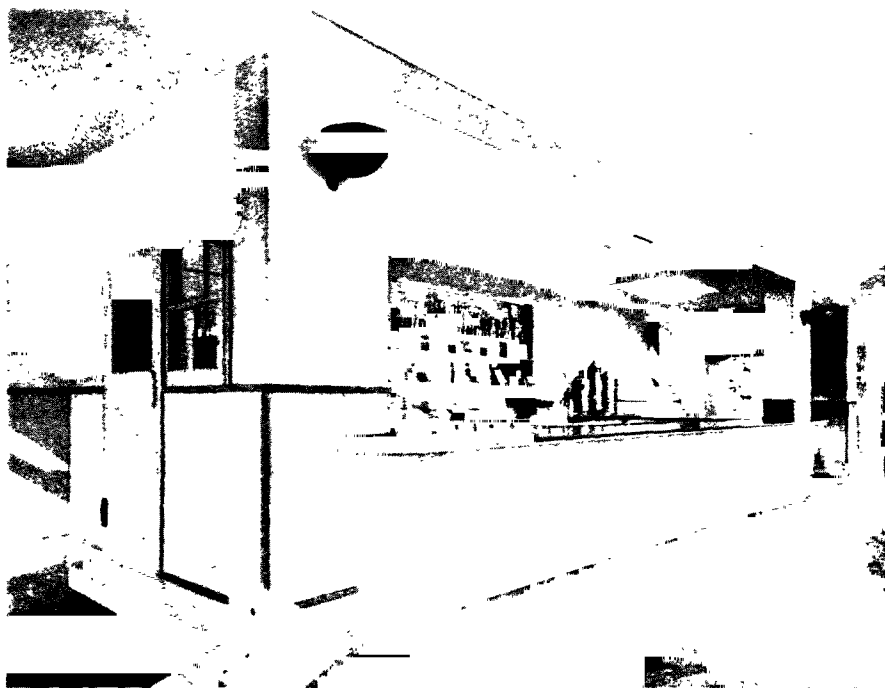


HALL

UNBROKEN COLOURED SURFACES RESULTING FROM THE NON-INTRODUCTION OF COMPLICATED LINES



THE HALL. INTERIOR DECORATION RESULTING FROM THE BARE STATEMENT OF CONSTRUCTION, FORMING A FRAME TO BOTH CARPET AND FURNITURE



TUCK SHOP, OUNDELE. EFFECT OF FORCED HORIZONTALITY BOTH IN THE BEAMS AND COUNTER BY THE INTRODUCTION OF HORIZONTAL BREAKS

Pecci Bicknell, 1957



DINING-ROOM

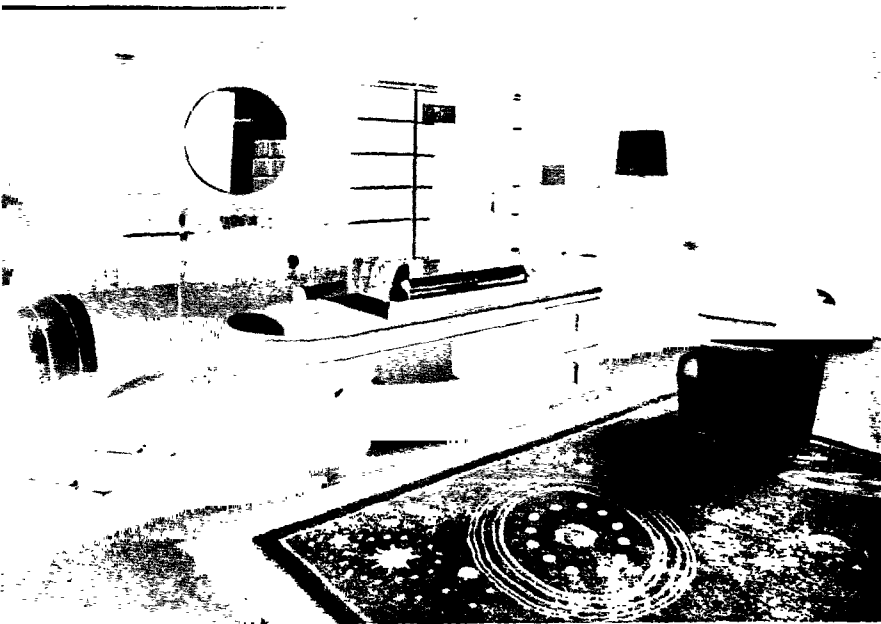


DINING-ROOM

DESIGNS RELYING ON PLAIN SURFACES AND SIMPLICITY OF LINES, ABSENCE OF MOULDINGS
AND QUALITY OF MATERIALS



STUDY (JEAN ROYÈRE)



A LIBRARY (PAUL FOLLON)

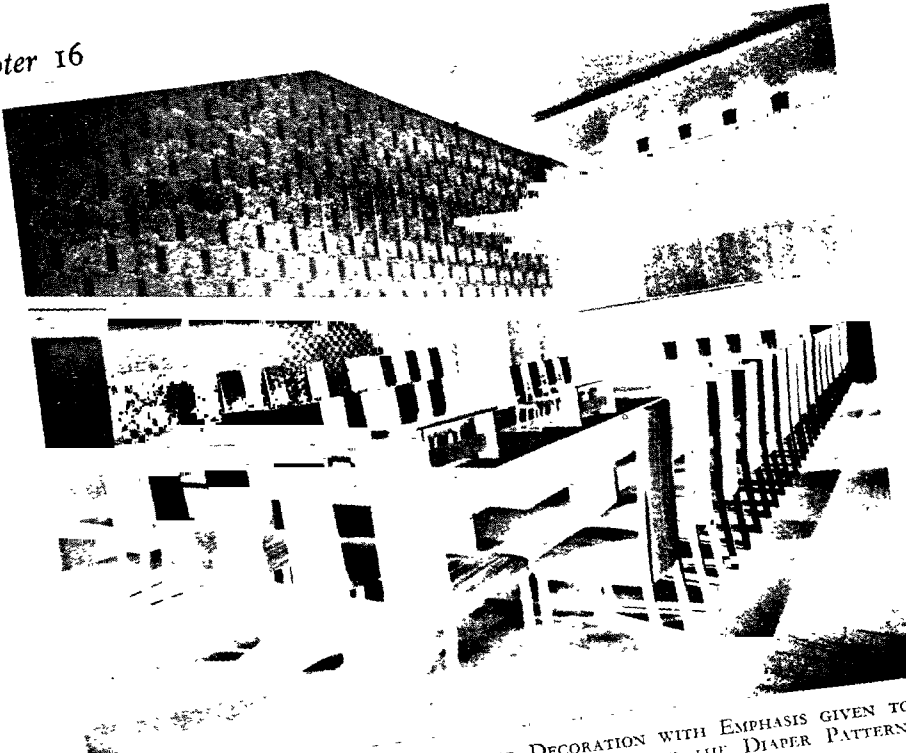
INTERIORS WHERE WALLS AND FURNITURE ARE TREATED ASYMMETRICALLY, A COMMON LINK BEING THE PREDOMINANCE OF HORIZONTAL LINES



R.M.S. "QUEEN MARY" PANEL—AIR
(Carving by Bainbridge Copnall.)



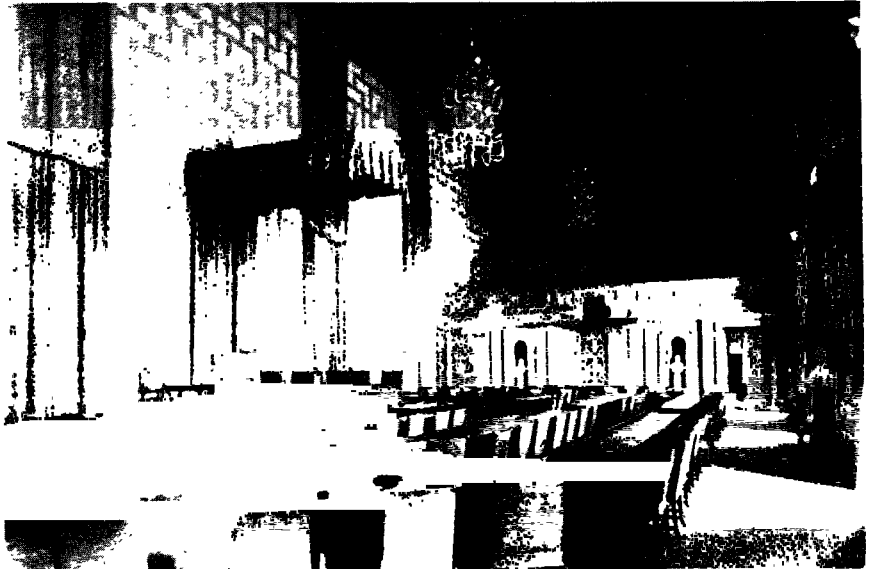
R.M.S. "QUEEN MARY" PANEL—SEA
DECORATION OF THE POST-IMPRESSIONIST SCHOOL. RESEARCH OF DISTORTED LINES
COMBINED WITH SYMBOLISM
(Carving by Bainbridge Copnall.)



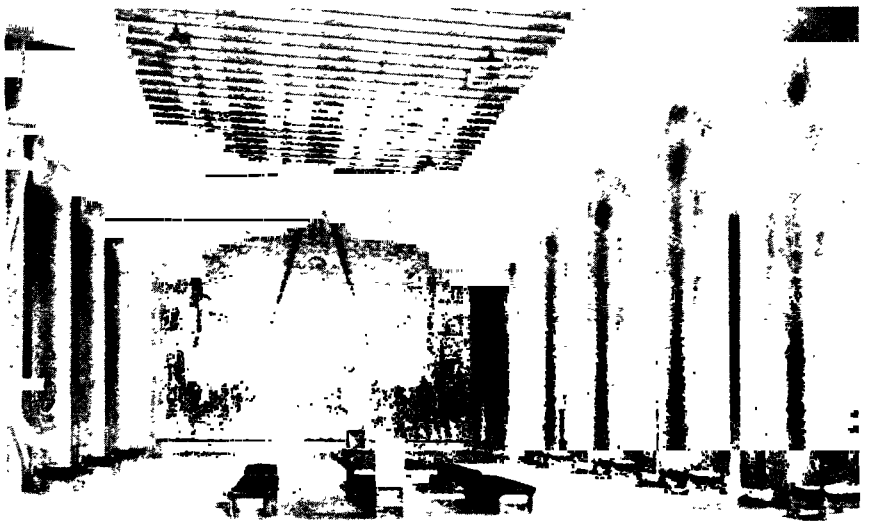
RAADZAAL (W. M. DUDOCK). INTERIOR DECORATION WITH EMPHASIS GIVEN TO HORIZONTAL LINES, THE WALL TREATMENT BEING OF THE DIAPER PATTERN, CREATING UNIFORMITY



AN INTERIOR WITH SCREEN EFFECTS. SITTING-ROOM IN COUNT OKUMA'S VILLA AT WASHIDA, JAPAN



TOWN HALL, STOCKHOLM
(Ragnar Ostberg, *Architect.*)



STADHUS, STOCKHOLM
INTERIOR TREATMENTS SHOWING ADOPTION AND ADJUSTMENT OF TRADITIONAL FORMS
(Ragnar Ostberg, *Architect.*)



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